Geology Subject Index
Volume 15

absolute age *see also* geochronology; isotopes

absolute age—dates

basalts: Critical evaluation of the age of the Deccan Traps, India; implications for flood-basalt volcanism and faunal extinctions
(Baksi, Ajoy K.) 2: 147

corals: Uranium series ages of corals from the upper Pleistocene Mulege terrace, Baja California Sur, Mexico
(Ashby, James R., *et al.*) 2: 139

intrusive rocks: Constraints on timing of deformation in the Benton Range, southeastern California, and implications to Nevadan orogenesis
(Renne, Paul R., *et al.*) 11: 1031

K-bentonite: Alleghanian episode of K-bentonite illitization in the southern Appalachian Basin
(Elliott, W. Crawford, *et al.*) 8: 735

lamprophyres: Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941

marine sediments: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea
(Calvert, S. E., *et al.*) 10: 918

metamorphic rocks: Evolution of the early Proterozoic Colorado Province; constraints from U-Pb geochronology; with Suppl. Data 87-31
(Reed, John C., Jr., *et al.*) 9: 861

metaplutonic rocks: Timing of Acadian deformation in northeastern Maine; with Suppl. Data 87-06
(Hubacher, F. A., *et al.*) 1: 80

muscovite: $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages
(Dallmeyer, R. D.) 11: 998

mylonites: Tectonically reset Rb-Sr system during Late Ordovician terrane assembly in Iapetus, western Ireland
(Kennan, P. S., *et al.*) 12: 1155

organic materials: Comparative radiocarbon dating of terrestrial plant macrofossils and aquatic moss from the "ice-free corridor" of Western Canada
(MacDonald, G. M., *et al.*) 9: 837

sediments: Evaluation of amino-acid racemization/epimerization dating using radiocarbon-dated fossil land snails
(Goodfriend, Glenn A.) 8: 698

volcanic rocks: Chow Bahir Rift; a "failed" rift in southern Ethiopia
(W-Gabriel, Giday, *et al.*) 5: 430

— Late Quaternary caldera-forming eruptions in the eastern Aleutian Arc, Alaska
(Miller, Thomas P., *et al.*) 5: 434

— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389

— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082

zircon: Age and tectonic setting of Mesozoic metavolcanic and metasedimentary rocks, northern White Mountains, California
(Hanson, R. Brooks, *et al.*) 11: 1074

— Arabian Shield ophiolites and late Proterozoic microplate accretion; with Suppl. Data 87-15
(Pallister, John S., *et al.*) 4: 320

— Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

— Isotopic age constraints on middle Paleozoic deformation in the northern Sierra Nevada, California
(Saleeby, Jason B., *et al.*) 8: 757

— U-Pb ages of granitoid clasts in upper Mesozoic arc-derived strata of the Vizcaino Peninsula, Baja California, Mexico
(Kimbrough, David L., *et al.*) 1: 26

— Uranium-lead isotopic ages of plagiogranites from the Troodos Ophiolite, Cyprus, and their tectonic significance
(Mukasa, Samuel B., *et al.*) 9: 825

absolute age—interpretation

continental drift: Definition of the Iapetus rift-drift transition in western Newfoundland
(Williams, Harold, *et al.*) 11: 1044

crust: Use and abuse of crust-formation ages
(Arndt, Nicholas T., *et al.*) 10: 893

deformation: Extensional deformation with northwest vergence, Pioneer core complex, central Idaho; discussion and reply
(Pavlis, Terry L., *et al.*) 3: 283

dolomitization: Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 262

terranes: Continental rifting and the Archean-Proterozoic transition
(Blake, Tim S., *et al.*) 3: 229

acoustical surveys *see under* geophysical surveys *under* Pacific Ocean

Adriatic Sea—tectonophysics

plate tectonics: Is the Adriatic an African promontory?
(Anderson, Helen) 3: 212

Africa *see also* Burundi; Egypt; Ethiopia; Kenya; Morocco; South Africa; Tanzania; Uganda; Zimbabwe

Africa—geochemistry

mantle: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99

Africa—structural geology

neotectonics: Off-axis volcanism in the Gregory Rift, East Africa; implications for models of continental rifting
(Bosworth, William) 5: 397

Africa—tectonophysics

crust: Deep crustal response to continental collision; the Limpopo Belt of Southern Africa
(Van Reenen, D. D., *et al.*) 1: 11

— Off-axis volcanism in the Gregory Rift, East Africa; implications for models of continental rifting
(Bosworth, William) 5: 397

plate tectonics: Deep crustal response to continental collision; the Limpopo Belt of Southern Africa
(Van Reenen, D. D., *et al.*) 1: 11

— Is the Adriatic an African promontory?
(Anderson, Helen) 3: 212

Alabama—stratigraphy

Cretaceous: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

Paleocene: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

Tertiary: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

Alaska—geochemistry

fluid inclusions: Tectonically driven fluid flow in the Kodiak accretionary complex, Alaska
(Vrolijk, Peter) 5: 466

Alaska—geochronology

Holocene: Late Quaternary caldera-forming eruptions in the eastern Aleutian Arc, Alaska
(Miller, Thomas P., *et al.*) 5: 434

Alaska—oceanography
continental margin: Inferences on sediment strength and fault friction from structures at the Aleutian Trench
(Davis, Dan M., *et al.*) 6: 517

Alaska—petrology
magmas: Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496

Alaska—structural geology
tectonics: Ellesmerian(?) and Brookian deformation in the Franklin Mountains, northeastern Brooks Range, Alaska, and its bearing on the origin of the Canada Basin
(Oldow, J. S., *et al.*) 1: 37

Alaska—tectonophysics
plate tectonics: Inferences on sediment strength and fault friction from structures at the Aleutian Trench
(Davis, Dan M., *et al.*) 6: 517

Alberta—geochronology
Holocene: Comparative radiocarbon dating of terrestrial plant macrofossils and aquatic moss from the "ice-free corridor" of Western Canada
(MacDonald, G. M., *et al.*) 9: 837

Alberta—sedimentary petrology
reefs: Saddle dolomite as a by-product of chemical compaction and thermochemical sulfate reduction
(Machel, Hans G.) 10: 936

Alberta—stratigraphy
Devonian: Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393

Alberta—structural geology
tectonics: Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785

algal flora—biostratigraphy
Paleozoic: (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications
(Benjamini, C., *et al.*) 10: 922

algal flora—coccoliths
Jurassic: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92

algal flora—diatom flora
Tertiary: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634

algal flora—nannofossils
Cenozoic: Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694
Miocene: Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509
Tertiary: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

alkali gabbros *see under* igneous rocks

alluvium *see under* clastic sediments *under* sediments

Alps *see also* the individual countries

Alps—petrology
igneous rocks: Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622

Alps—stratigraphy
Mesozoic: Metamorphosed soils as stratigraphic indicators in deformed terranes; an example from the Eastern Alps
(Barrientos, Ximena, *et al.*) 9: 841
Paleozoic: Metamorphosed soils as stratigraphic indicators in deformed terranes; an example from the Eastern Alps
(Barrientos, Ximena, *et al.*) 9: 841

aluminum—geochemistry
sandstone: Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295

amino acids *see under* organic materials

Andes *see also* the individual countries

Andes—petrology
magmas: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443

Andes—structural geology
neotectonics: Recent rapid uplift in the Bolivian Andes; evidence from fission-track dating
(Benjamin, Michael T., *et al.*) 7: 680
tectonics: Tectonic rotations on the leading edge of South America; the Bolivian orocline revisited
(Beck, Myrl E., Jr.) 9: 806

angiosperm flora—paleoecology
Phanerozoic: Effect of the advent and diversification of vascular land plants on mineral weathering through geologic time
(Knoll, Martin A., *et al.*) 12: 1099

angiosperms *see also* angiosperm flora

Antarctica—geomorphology
weathering: Capillary moisture flow and the origin of cavernous weathering in dolerites of Bull Pass, Antarctica
(Conca, James L., *et al.*) 2: 151
— Capillary moisture flow and the origin of cavernous weathering in dolerites of Bull Pass, Antarctica; discussion
(Winkler, Erhard M.) 10: 975

Antarctica—petrology
metamorphism: Origin and evolution of granulites in normal and thickened crusts
(Ellis, D. J.) 2: 167

Antarctica—stratigraphy
changes of level: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634
Tertiary: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634

Antarctica—tectonophysics
plate tectonics: Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694

Apennines—petrology
igneous rocks: Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622

Apennines—structural geology
tectonics: Segmentation and configuration of subducted lithosphere in Italy; an important control on thrust-belt and foredeep-basin evolution
(Royden, Leigh, *et al.*) 8: 714

Appalachians *see also* the individual states and provinces

Appalachians—sedimentary petrology
clay mineralogy: Alleghanian episode of K-bentonite illitization in the southern Appalachian Basin
(Elliott, W. Crawford, *et al.*) 8: 735
— Distribution of maximum burial temperatures across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Lyons, Paul C., *et al.*) 2: 183
sedimentation: Distribution of maximum burial temperature across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Karig, D. E., *et al.*) 3: 278

Appalachians—structural geology
faults: Brevard fault zone, Southern Appalachians; a medium-angle, dextral, Alleghanian shear zone
(Vauchez, Alain) 7: 669

isostasy: Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130
tectonics: Normal-fault boundary of an Appalachian basement massif; results of COCORP profiling across the Pine Mountain Belt in western Georgia
(Nelson, K. D., *et al.*) 9: 832
— Sedimentary response to Mississippian tectonic activity at the east end of the 38th Parallel fracture zone; discussion and reply
(Bjerstedt, Thomas W., *et al.*) 3: 282

Appalachians—tectonophysics
crust: Deep seismic reflection profile across the Northern Appalachians; discussion and reply
(Church, W. R., *et al.*) 2: 182

Arabian Peninsula *see also* Saudi Arabia

Arabian Peninsula—tectonophysics
plate tectonics: Arabian Shield ophiolites and late Proterozoic microplate accretion; with Suppl. Data 87-15
(Pallister, John S., *et al.*) 4: 320

archaeology *see also under* stratigraphy *under* Israel; symposia

Archean *see also under* stratigraphy *under* Northwest Territories; South Africa; Zimbabwe

Archean—tectonophysics
crust: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

archeology *see* archaeology *under* stratigraphy *under* Israel; symposia

Arctic Ocean—geophysical surveys
seismic surveys: Structure of the southeast margin of the Beaufort-Mackenzie Basin, Arctic Canada, from crustal seismic-reflection data
(Cook, Frederick A., *et al.*) 10: 931

Arctic Ocean—oceanography
ocean floors: Ellesmerian(?) and Brookian deformation in the Franklin Mountains, northeastern Brooks Range, Alaska, and its bearing on the origin of the Canada Basin
(Oldow, J. S., *et al.*) 1: 37

Arctic Ocean—tectonophysics
crust: Continent-ocean transition at the western Barents Sea/Svalbard continental margin
(Eldholm, Olav, *et al.*) 12: 1118
— Structure of the southeast margin of the Beaufort-Mackenzie Basin, Arctic Canada, from crustal seismic-reflection data
(Cook, Frederick A., *et al.*) 10: 931

Arctic region *see also* the individual countries; Spitsbergen

Arctic region—tectonophysics
plate tectonics: Continent-ocean transition at the western Barents Sea/Svalbard continental margin
(Eldholm, Olav, *et al.*) 12: 1118

Argentina—petrology
igneous rocks: Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709

arid regions *see* deserts *under* eolian features *under* geomorphology

Arizona—geochemistry
isotopes: Fluid motion associated with Tertiary mylonitization and detachment faulting; $^{18}O/^{16}O$ evidence from the Picacho metamorphic core complex, Arizona
(Kerrich, R., *et al.*) 1: 58

Arizona—geophysical surveys
seismic surveys: COCORP Arizona transect; strong crustal reflections and offset Moho beneath the transition zone
(Hauser, E. C., *et al.*) 12: 1103

Arizona—stratigraphy
Cretaceous: Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence
(Stone, Paul, *et al.*) 6: 561
Miocene: Correlation of the Peach Springs Tuff, a large-volume Miocene ignimbrite sheet in California and Arizona; discussion and reply
(Mittwede, Steven K., *et al.*) 4: 375
Triassic: Dissected paleotopography and base-level changes in a Triassic fluvial sequence
(Kraus, Mary J., *et al.*) 1: 18

Arizona—structural geology
deformation: Late Cretaceous to early Tertiary ductile deformation; Catalina-Rincon metamorphic core complex, southeastern Arizona
(Bykerk-Kauffman, Ann, *et al.*) 5: 462
faults: Displacement calculations across a metamorphic core complex mylonite zone; Pinaleno Mountains, southeastern Arizona
(Naruk, Stephen J.) 7: 656
— Low-angle normal-fault system along the range front of the southwestern Galiuro Mountains in southeastern Arizona
(Dickinson, William R., *et al.*) 8: 727
folds: Kink folding in an extended terrane; Tortilla Mountains, southeastern Arizona; discussions and replies
(Verbeek, Earl R., *et al.*) 9: 870
isostasy: Crustal structure from three-dimensional modeling of a metamorphic core complex; a model for uplift, Santa Catalina-Rincon Mountains, Arizona; discussion and reply
(Aiken, Carlos L. V., *et al.*) 10: 978
neotectonics: COCORP Arizona transect; strong crustal reflections and offset Moho beneath the transition zone
(Hauser, E. C., *et al.*) 12: 1103
tectonics: Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence
(Stone, Paul, *et al.*) 6: 561
— Crustal structure from three-dimensional modeling of a metamorphic core complex; a model for uplift, Santa Catalina-Rincon Mountains, Arizona; discussion and reply
(Aiken, Carlos L. V., *et al.*) 10: 978

Arizona—tectonophysics
crust: COCORP Arizona transect; strong crustal reflections and offset Moho beneath the transition zone
(Hauser, E. C., *et al.*) 12: 1103
— Crustal structure from three-dimensional modeling of a metamorphic core complex; a model for uplift, Santa Catalina-Rincon Mountains, Arizona; discussion and reply
(Aiken, Carlos L. V., *et al.*) 10: 978
Mohorovicic discontinuity: COCORP Arizona transect; strong crustal reflections and offset Moho beneath the transition zone
(Hauser, E. C., *et al.*) 12: 1103

Arkansas—stratigraphy
Cambrian: Geological implications of Late Cambrian trilobites from the Collier Shale, Jessieville area, Arkansas
(Hart, William D., *et al.*) 5: 447

artifacts *see* archaeology *under* stratigraphy *under* Israel; symposia

Asia *see also* Arabian Peninsula; Burma; China; Himalayas; India; Indonesia; Japan; Korea; Philippine Islands; Thailand

Atlantic Coastal Plain—stratigraphy
changes of level: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159
Paleogene: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327

Atlantic Ocean *see also* Gulf of Mexico; North Sea

Atlantic Ocean—geochemistry
sea water: Continental margin brine seeps; their geological consequences
(Paull, Charles K., *et al.*) 6: 545

Atlantic Ocean—geophysical surveys
seismic surveys: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327
— Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509

— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank
(Eberlin, Gregor P., *et al.*) 1: 75
— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank; discussion and reply
(Ball, M. M., *et al.*) 11: 1081

Atlantic Ocean—mineralogy
carbonates: Ikaite pseudomorphs in the Zaire deep-sea fan; an intermediate between calcite and porous calcite
(Jansen, J. H. F., *et al.*) 3: 245

Atlantic Ocean—oceanography
ocean floors: Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank
(Eberli, Gregor P., *et al.*) 1: 75
— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank; discussion and reply
(Ball, M. M., *et al.*) 11: 1081

Atlantic Ocean—stratigraphy
Cenozoic: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159
Miocene: Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509

Atlantic Ocean—structural geology
tectonics: Inversion tectonics on the continental margin east of Newfoundland
(Grant, A. C.) 9: 845

Atlantic Ocean—tectonophysics
crust: Fracture zones in the equatorial Atlantic and the breakup of western Pangea
(Jones, E. J. W.) 6: 533
— Inversion tectonics on the continental margin east of Newfoundland
(Grant, A. C.) 9: 845

Atlantic region *see also* the individual countries

Atlantic region—stratigraphy
continental drift: Definition of the Iapetus rift-drift transition in western Newfound'and
(Williams, Harold, *et al.*) 11: 1044

Atlantic region—tectonophysics
continental drift: Tectonically reset Rb-Sr system during Late Ordovician terrane assembly in Iapetus, western Ireland
(Kennan, P. S., *et al.*) 12: 1155
plate tectonics: Fracture zones in the equatorial Atlantic and the breakup of western Pangea
(Jones, E. J. W.) 6: 533

atmosphere—circulation
turbulence: Airflow-terrain interactions through a mountain gap, with an example of eolian activity beneath an atmospheric hydraulic jump
(Gaylord, David R., *et al.*) 9: 789

atolls *see* reefs *under* cementation *under* diagenesis; *see* reefs *under* oceanography *under* East Pacific Ocean Islands; Jamaica; *see* reefs *under* sedimentary petrology *under* Alberta; Manitoba

Australasia *see also* New Zealand

Australasia—tectonophysics
plate tectonics: Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610

Australia *see also* New South Wales; Queensland; Victoria; Western Australia

Australia—structural geology
tectonics: Thin-skinned tectonics in part of the Lachlan fold belt near Delegate, southeastern Australia
(Glen, R. A., *et al.*) 11: 1070
— Timing the breakup of a Proterozoic supercontinent; evidence from Australian intracratonic basins
(Lindsay, John F., *et al.*) 11: 1061

Australia—tectonophysics
continental drift: Timing the breakup of a Proterozoic supercontinent; evidence from Australian intracratonic basins
(Lindsay, John F., *et al.*) 11: 1061
crust: Deep crustal seismic reflection profiling, New England Orogen, eastern Australia; telescoping of the crust and a hidden, deep, layered sedimentary sequence; discussion and reply
(Murray, Cecil G., *et al.*) 12: 1180
plate tectonics: Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694
— Timing the breakup of a Proterozoic supercontinent; evidence from Australian intracratonic basins
(Lindsay, John F., *et al.*) 11: 1061

Austria—petrology
metamorphism: Trace-element zoning in a metamorphic garnet
(Hickmott, D. D., *et al.*) 6: 573

Austria—stratigraphy
Mesozoic: Metamorphosed soils as stratigraphic indicators in deformed terranes; an example from the Eastern Alps
(Barrientos, Ximena, *et al.*) 9: 841
Paleozoic: Metamorphosed soils as stratigraphic indicators in deformed terranes; an example from the Eastern Alps
(Barrientos, Ximena, *et al.*) 9: 841

automatic data processing *see* data processing

Bahamas—oceanography
continental margin: Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank
(Eberli, Gregor P., *et al.*) 1: 75
— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank; discussion and reply
(Ball, M. M., *et al.*) 11: 1081

Bahamas—sedimentary petrology
diagenesis: Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 262

Baltic region *see also* the individual countries

basalts *see under* igneous rocks

Basin and Range Province—structural geology
faults: Low-angle normal-fault system along the range front of the southwestern Galiuro Mountains in southeastern Arizona
(Dickinson, William R., *et al.*) 8: 727
neotectonics: Late Miocene reactivation of ancestral Rocky Mountain structures in the Texas Panhandle; a response to Basin and Range extension
(Budnik, Roy T.) 2: 163
tectonics: Paleomagnetic and structural evidence for middle Tertiary counterclockwise block rotation in the Dixie Valley region, west-central Nevada
(Hudson, Mark R., *et al.*) 7: 638

batholiths *see under* intrusions

biogeography *see also under* stratigraphy *under* Hawaii

biogeography—brachiopods
Devonian: Frasnian/Famennian mass extinction and cold-water oceans; discussion and reply
(Raymond, Anne, *et al.*) 8: 777

biogeography—corals
Permian: Paleogeographic implications of Permian Tethyan corals from the Klamath Mountains, California
(Miller, M. Meghan, *et al.*) 3: 266

biogeography—mollusks
Triassic: Biogeographic complexity in Triassic bivalves of the Wallowa Terrane, northwestern United States; oceanic islands, not continents, provide the best analogues
(Newton, Cathryn R.) 12: 1126

biography—general
Darwin, Charles: Darwin's three mistakes; discussions and replies
(Schoch, Robert M., *et al.*) 2: 175
— Darwin's three mistakes; discussion and reply
(Kellogg, Davida E., *et al.*) 4: 375

biologic evolution *see under* paleontology

Black Sea—geochronology
Holocene: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea
(Calvert, S. E., *et al.*) 10: 918

Bolivia—stratigraphy
Cretaceous: Tectonic rotations on the leading edge of South America; the Bolivian orocline revisited
(Beck, Myrl E., Jr.) 9: 806

Bolivia—structural geology
tectonics: Recent rapid uplift in the Bolivian Andes; evidence from fission-track dating
(Benjamin, Michael T., *et al.*) 7: 680

boudinage *see under* style *under* lineation

brachiopods—biostratigraphy
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647

brachiopods—paleoecology
Permian: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

British Columbia—economic geology
gold ores: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471

British Columbia—stratigraphy
Jurassic: Significance of Jurassic radiolarians from the Cache Creek Terrane, British Columbia
(Cordey, Fabrice, *et al.*) 12: 1151

British Columbia—structural geology
orogeny: "Antler" allochthon in the Kootenay Arc?
(Gehrels, George E., *et al.*) 8: 769
tectonics: "Antler" clastics in the Canadian Cordillera
(Gordey, S. P., *et al.*) 2: 103
— Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785
— Extension across the Eocene Okanagan crustal shear in southern British Columbia; discussion and reply
(Okulitch, Andrew V., *et al.*) 2: 187
— Tectonic denudation of the Shuswap metamorphic terrane of southeastern British Columbia
(Brown, Richard L., *et al.*) 2: 142

Burma—tectonophysics
plate tectonics: Transcurrent movements in the Burma-Andaman Sea region
(Hla Maung) 10: 911

burrows *see* ichnofossils

Burundi—sedimentary petrology
sedimentary rocks: Nearshore carbonate deposits in Lake Tanganyika
(Cohen, Andrew S., *et al.*) 5: 414

California—economic geology
manganese ores: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722

California—environmental geology
pollution: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences
(Varekamp, Johan C., *et al.*) 11: 1018

California—geochronology
Devonian: Isotopic age constraints on middle Paleozoic deformation in the northern Sierra Nevada, California
(Saleeby, Jason B., *et al.*) 8: 757
Jurassic: Constraints on timing of deformation in the Benton Range, southeastern California, and implications to Nevadan orogenesis
(Renne, Paul R., *et al.*) 11: 1031
Mesozoic: Age and tectonic setting of Mesozoic metavolcanic and metasedimentary rocks, northern White Mountains, California
(Hanson, R. Brooks, *et al.*) 11: 1074
Miocene: Temporally constrained tectonic rotations derived from magnetostratigraphic data; implications for the initiation of the Garlock Fault, California
(Burbank, Douglas W., *et al.*) 12: 1172
Silurian: Isotopic age constraints on middle Paleozoic deformation in the northern Sierra Nevada, California
(Saleeby, Jason B., *et al.*) 8: 757

California—geomorphology
eolian features: Influences of eolian and pedogenic processes on the origin and evolution of desert pavements
(McFadden, Leslie D., *et al.*) 6: 504
fluvial features: Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California
(Dorn, Ronald I., *et al.*) 2: 108
— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California; discussion and reply
(Wells, S. G., *et al.*) 12: 1178

California—geophysical surveys
seismic surveys: Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159
— Possible evidence for subducted sedimentary materials beneath Central California
(Trehu, Anne M., *et al.*) 3: 254

California—hydrogeology
thermal waters: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences
(Varekamp, Johan C., *et al.*) 11: 1018

California—oceanography
continental shelf: Crescentic dunes on the inner continental shelf off Northern California
(Cacchione, D. A., *et al.*) 12: 1134

California—petrology
intrusions: Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523
lava: Internal textures of rhyolite flows as revealed by research drilling
(Manley, Curtis R., *et al.*) 6: 549
magmas: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
— Granites of the batholiths of California; products of local assimilation and regional-scale crustal contamination
(Ague, Jay J., *et al.*) 1: 63
metasomatism: Metasomatism and partial melting in a subduction complex; Catalina Schist, Southern California
(Sorensen, Sorena S., *et al.*) 2: 115

California—sedimentary petrology
sedimentary structures: Problems of recognition of olistostromes; an example from the lower Pit Formation, eastern Klamath Mountains, California
(Eastoe, Christopher J., *et al.*) 6: 541

California—seismology
earthquakes: Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701

California—stratigraphy
changes of level: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119
Cretaceous: Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence
(Stone, Paul, *et al.*) 6: 561
Miocene: Correlation of the Peach Springs Tuff, a large-volume Miocene ignimbrite sheet in California and Arizona; discussion and reply
(Mittwede, Steven K., *et al.*) 4: 375
Permian: Paleogeographic implications of Permian Tethyan corals from the Klamath Mountains, California
(Miller, M. Meghan, *et al.*) 3: 266
Pleistocene: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119
Proterozoic: Late Precambrian tectonism in the Kingston Range, Southern California; discussion and reply
(Troxel, Bennie W., *et al.*) 3: 274
Tertiary: New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171

California—structural geology
deformation: Post-Nevadan deformation along the Bear Mountains fault zone; implications for the Foothills terrane, central Sierra Nevada, California
(Paterson, Scott R., *et al.*) 6: 513
neotectonics: Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701
— Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159
— Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences
(Varekamp, Johan C., *et al.*) 11: 1018
— State of stress near the San Andreas Fault; implications for wrench tectonics
(Mount, Van S., *et al.*) 12: 1143
— Temporally constrained tectonic rotations derived from magnetostratigraphic data; implications for the initiation of the Garlock Fault, California
(Burbank, Douglas W., *et al.*) 12: 1172
orogeny: Extent of the Nevadan Orogeny, central Sierra Nevada, California
(Tobisch, Othmar T., *et al.*) 2: 132
tectonics: Age and tectonic setting of Mesozoic metavolcanic and metasedimentary rocks, northern White Mountains, California
(Hanson, R. Brooks, *et al.*) 11: 1074
— Continuation of Antler and Sonoma orogenic belts to the eastern Sierra Nevada, California, and Late Triassic thrusting in a compressional arch
(Schweickert, Richard A., *et al.*) 3: 270
— Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence
(Stone, Paul, *et al.*) 6: 561
— History and controls of subsidence in the Late Cretaceous-Tertiary Great Valley forearc basin, California
(Moxon, Ian W., *et al.*) 7: 626
— Late Precambrian tectonism in the Kingston Range, Southern California; discussion and reply
(Troxel, Bennie W., *et al.*) 3: 274
— New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171

California—tectonophysics
crust: Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159
— Possible evidence for subducted sedimentary materials beneath Central California
(Trehu, Anne M., *et al.*) 3: 254
heat flow: Thermal maturity of the Cambria Slab, an inferred trench-slope basin in Central California
(Underwood, Michael B., *et al.*) 3: 216
plate tectonics: History and controls of subsidence in the Late Cretaceous-Tertiary Great Valley forearc basin, California
(Moxon, Ian W., *et al.*) 7: 626
— State of stress near the San Andreas Fault; implications for wrench tectonics
(Mount, Van S., *et al.*) 12: 1143

Cambrian *see also under* stratigraphy *under* Arkansas; Newfoundland; Virginia

Cambrian—structural geology
tectonics: Origin of cratonic basins
(Klein, George deV., *et al.*) 12: 1094

Canada *see also* Alberta; Appalachians; Atlantic Coastal Plain; British Columbia; Canadian Shield; Great Lakes region; Great Plains; Labrador; Manitoba; New Brunswick; Newfoundland; Northwest Territories; Yukon Territory

Canada—structural geology
tectonics: Geometric test for Late Cretaceous-Paleogene intracontinental transform faulting in the Canadian Cordillera; discussion and reply
(Chamberlain, V. E., *et al.*) 2: 185

Canadian Shield—economic geology
gold ores: Magnetic felsic intrusions associated with Canadian Archean gold deposits
(Hattori, Keiko) 12: 1107

Canadian Shield—structural geology
tectonics: Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785
— Thermo-tectonic evolution of a metamorphic internal zone documented by axial projections and petrological P-T paths, Wopmay Orogen, Northwest Canada
(St-Onge, M. R., *et al.*) 2: 155

Canadian Shield—tectonophysics
crust: Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785
— Gravity patterns and Precambrian structure in the North American central plains
(Thomas, M. D., *et al.*) 6: 489
plate tectonics: Multiple dikes in the lower Kam Group, Yellowknife greenstone belt; evidence for Archean sea-floor spreading?; discussion and reply
(Kusky, Timothy M., *et al.*) 3: 280

carbon—geochemistry
marine sediments: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea
(Calvert, S. E., *et al.*) 10: 918
olivine: Carbon solubility in olivine; implications for upper mantle evolution
(Tingle, Tracy N., *et al.*) 4: 324
shale: Organic carbon losses during burial and thermal maturation of normal marine shales
(Raiswell, Robert, *et al.*) 9: 853

carbon—isotopes
C-13/C-12: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722
— Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California
(Dorn, Ronald I., *et al.*) 2: 108
— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California; discussion and reply
(Wells, S. G., *et al.*) 12: 1178
— Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia
(Oliver, Nick, *et al.*) 9: 793
— Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119

carbonate rocks *see under* sedimentary rocks

carbonates *see under* minerals

carbonatites *see under* igneous rocks

Carboniferous *see also under* stratigraphy *under* Morocco

Caribbean region *see also* the individual countries

Caribbean region—areal geology
regional: Caribbean geological conference, Barbados
(MacDonald, William D.) 1: 89

Carpathians *see also* the individual countries

Cenozoic *see also* Eocene; Oligocene; Paleocene; Paleogene; Quaternary; Tertiary; *see also under* stratigraphy *under* Atlantic Ocean; New Zealand

changes of level *see also* epeirogeny; *see also under* stratigraphy *under* Antarctica; Atlantic Coastal Plain; California; East Pacific Ocean Islands; Mexico; New Jersey; New Zealand; Quaternary; symposia

changes of level—detection
indicators: Late Quaternary sea level; the marine and terrestrial record
(Carew, James L., *et al.*) 12: 1176

changes of level—evolution
diagenesis: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673

chemical analysis *see also* electron microscopy

Chile—environmental geology
geologic hazards: Using the Landsat thematic mapper to detect and monitor active volcanoes; an example from Lascar Volcano, northern Chile
(Francis, P. W., *et al.*) 7: 614

Chile—geophysical surveys
remote sensing: Using the Landsat thematic mapper to detect and monitor active volcanoes; an example from Lascar Volcano, northern Chile
(Francis, P. W., *et al.*) 7: 614

Chile—petrology
magmas: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443

China—geochronology
Pleistocene: Thermoluminescence dating of the Malan Loess at Zhaitang, China
(Lu Yanchou, *et al.*) 7: 603

China—structural geology
neotectonics: Geomorphic evidence for active faulting in the Altyn Tagh and northern Tibet and qualitative estimates of its contribution to the convergence of India and Eurasia
(Molnar, Peter, *et al.*) 3: 249

clastic rocks *see under* sedimentary rocks

clastic sediments *see under* sediments

clay mineralogy—areal studies
Appalachians: Alleghanian episode of K-bentonite illitization in the southern Appalachian Basin
(Elliott, W. Crawford, *et al.*) 8: 735
— Distribution of maximum burial temperatures across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Lyons, Paul C., *et al.*) 2: 183
Wyoming: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896

clay mineralogy—theoretical studies
diagenesis: Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295

climate, ancient *see* paleoclimatology

coal *see also under* organic residues *under* sedimentary rocks

Coelenterata *see also* corals

Colorado—geochronology
Proterozoic: Evolution of the early Proterozoic Colorado Province; constraints from U-Pb geochronology; with Suppl. Data 87-31
(Reed, John C., Jr., *et al.*) 9: 861

Colorado—petrology
magmas: Compositional layers in the zoned magma chamber of the Grizzly Peak Tuff
(Fridrich, Christopher J., *et al.*) 4: 299

Colorado—sedimentary petrology
sedimentary structures: Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233

Colorado—structural geology
folds: Proterozoic cuspate basement-cover structure, Needle Mountains, Colorado
(Harris, C. W., *et al.*) 10: 950

Colorado Plateau *see also* the individual states

Colorado Plateau—stratigraphy
Triassic: Late Triassic paleogeography of the southern Cordillera; the problem of a source for voluminous volcanic detritus in the Chinle Formation of the Colorado Plateau region; discussion and reply
(Wyman, Richard V., *et al.*) 6: 578

Columbia Plateau *see also* the individual states

congresses *see* symposia

conodonts—biostratigraphy
Devonian: Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647
Ordovician: Geological implications of Late Cambrian trilobites from the Collier Shale, Jessieville area, Arkansas
(Hart, William D., *et al.*) 5: 447

conservation—natural resources
forests: A modest proposal
(Nisbet, E. G., *et al.*) 10: 983

continental drift *see also* plate tectonics; sea-floor spreading; *see also under* stratigraphy *under* Atlantic region; *see also under* tectonophysics *under* Atlantic region; Australia

continental drift—Gondwana
Atlantic region: $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages
(Dallmeyer, R. D.) 11: 998
North America: Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

continental drift—Pangaea
Atlantic region: Fracture zones in the equatorial Atlantic and the breakup of western Pangea
(Jones, E. J. W.) 6: 533

continental margin *see also under* oceanography *under* Alaska; Bahamas; Eastern U.S.; Ireland; Newfoundland; Northwest Territories; Southeastern U.S.; Spitsbergen

continental shelf *see also* marine geology; *see also under* oceanography *under* California; Great Britain; New Zealand; North Carolina; Scotland

continental slope *see also* marine geology; *see also under* oceanography *under* New Jersey

coral reefs *see* reefs

corals *see under* paleoecology *under* reefs

corals—biogeography
Permian: Paleogeographic implications of Permian Tethyan corals from the Klamath Mountains, California
(Miller, M. Meghan, *et al.*) 3: 266

corals—biostratigraphy
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647

corals—paleoecology
Ordovician: Encrusting corals on a latest Ordovician to earliest Silurian rocky shore, Southwest Hudson Bay, Manitoba, Canada
(Johnson, Markes E., *et al.*) 1: 15
Triassic: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

corals—stromatoporoids
Devonian: Effect of the Frasnian-Famennian extinction event on the stromatoporoids
(Stearn, Colin W.) 7: 677

Corsica—petrology
igneous rocks: Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622

Cretaceous *see also under* geochronology *under* Cyprus; India; *see also under* stratigraphy *under* Alabama; Arizona; Bolivia; California; Montana; Venezuela; Western Interior; Wyoming

Cretaceous—stratigraphy
boundary: Dynamic deformation of volcanic ejecta from the Toba Caldera; possible relevance to Cretaceous/Tertiary boundary phenomena; discussion and reply
(Izett, Glen A., *et al.*) 1: 90
paleoecology: Global trace-element biogeochemistry at the K/T boundary; oceanic and biotic response to a hypothetical meteorite impact
(Erickson, David J., III, *et al.*) 11: 1014

crust *see also under* tectonophysics *under* Africa; Appalachians; Archean; Arctic Ocean; Arizona; Atlantic Ocean; Australia; California; Canadian Shield; Great Plains; Idaho; Maine; Mediterranean region; Midwest; Montana; Morocco; New Zealand; Newfoundland; North America; North Sea; Pacific Ocean; United States; Western Australia; Wyoming

crust—age
absolute age: Use and abuse of crust-formation ages
(Arndt, Nicholas T., *et al.*) 10: 893

crust—interpretation
seismic profiles: Deep seismic reflection characteristics of the continental crust
(Allmendinger, Richard W., *et al.*) 4: 304
transition zones: Is the continental Moho the crust-mantle boundary?
(Griffin, William L., *et al.*) 3: 241

crust—observations
programs: Continental scientific drilling, the ADCOH Project, and large programs in the earth sciences
(Hatcher, Robert D., Jr.) 5: 473

crust—processes
igneous activity: Evidence for variations in magma production along oceanic spreading centers; a critical appraisal
(Karson, J. A., *et al.*) 2: 127

crust—theoretical studies
extension: Migration of the seismic-aseismic transition during uniform and nonuniform extension of the continental lithosphere
(England, Philip, *et al.*) 4: 291

crust—thickness
metamorphism: Origin and evolution of granulites in normal and thickened crusts
(Ellis, D. J.) 2: 167

crystal chemistry *see also* crystal growth; minerals

crystal growth *see also* minerals

crystal growth—carbonates
aragonite: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111
dolomite: Kinetics of dolomitization
(Sibley, Duncan F., *et al.*) 12: 1112
— Modern marine dolomite cement in a north Jamaican fringing reef
(Mitchell, J. T., *et al.*) 6: 557
— Saddle dolomite as a by-product of chemical compaction and thermochemical sulfate reduction
(Machel, Hans G.) 10: 936
ikaite: Ikaite pseudomorphs in the Zaire deep-sea fan; an intermediate between calcite and porous calcite
(Jansen, J. H. F., *et al.*) 3: 245
magnesian calcite: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111

crystal growth—hydrates
ikaite: Ikaite pseudomorphs in the Zaire deep-sea fan; an intermediate between calcite and porous calcite
(Jansen, J. H. F., *et al.*) 3: 245

crystal structure *see also* crystal growth; minerals

Cyprus—geochronology
Cretaceous: Uranium-lead isotopic ages of plagiogranites from the Troodos ophiolite, Cyprus, and their tectonic significance
(Mukasa, Samuel B., *et al.*) 9: 825

Cyprus—petrology
intrusions: Intrusive suite documented in the Troodos ophiolite plutonic complex, Cyprus
(Benn, K., *et al.*) 9: 821
— Spreading structure of the Troodos ophiolite, Cyprus; some paleomagnetic constraints
(Allerton, Simon, *et al.*) 7: 593
magmas: Magmas and magma chamber evolution, Troodos ophiolite, Cyprus
(Thy, P.) 4: 316

data processing—geomorphology
weathering: Capillary moisture flow and the origin of cavernous weathering in dolerites of Bull Pass, Antarctica
(Conca, James L., *et al.*) 2: 151

data processing—geophysical surveys
seismic surveys: Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159

data processing—sedimentary petrology
diagenesis: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673
— Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295

data processing—volcanology
pyroclastic flows: Discrimination of grain-size subpopulations in pyroclastic deposits
(Sheridan, Michael F., *et al.*) 4: 367

deformation *see also* geophysics; structural analysis

deformation—experimental studies
cataclasis: Transition from cataclastic flow to dislocation creep of feldspar; mechanisms and microstructures
(Tullis, Jan, *et al.*) 7: 606
compression: Three-dimensional geometry and kinematics of experimental piggyback thrusting
(Mulugeta, Genene, *et al.*) 11: 1052
extension: Geometries of extension fault systems developed in model experiments
(McClay, K. R., *et al.*) 4: 341

deformation—field studies
ductility: Late Cretaceous to early Tertiary ductile deformation; Catalina-Rincon metamorphic core complex, southeastern Arizona
(Bykerk-Kauffman, Ann, *et al.*) 5: 462

extension: Extensional deformation with northwest vergence, Pioneer core complex, central Idaho; discussion and reply
(Pavlis, Terry L., *et al.*) 3: 283
shear: Brevard fault zone, Southern Appalachians; a medium-angle, dextral, Alleghanian shear zone
(Vauchez, Alain) 7: 669
— Progressive deformation in an accretionary complex; an example from the Shimanto Belt of eastern Kyushu, Southwest Japan
(Mackenzie, J. S., *et al.*) 4: 353
— Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks
(Whitney, P. R., *et al.*) 6: 500
— Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India)
(Herren, Eveline) 5: 409
shear stress: Structural aspects of fluid-rock interactions in detachment zones
(Reynolds, Stephen J., *et al.*) 4: 362
strain: Extent of the Nevadan Orogeny, central Sierra Nevada, California
(Tobisch, Othmar T., *et al.*) 2: 132
— Post-Nevadan deformation along the Bear Mountains fault zone; implications for the Foothills terrane, central Sierra Nevada, California
(Paterson, Scott R., *et al.*) 6: 513
stress: State of stress near the San Andreas Fault; implications for wrench tectonics
(Mount, Van S., *et al.*) 12: 1143

deformation—theoretical studies
friction: Wear and gouge formation in brittle faulting
(Scholz, Christophter H.) 6: 493
melange: Thickening of fault zones; a mechanism of melange formation in accreting sediments
(Moore, J. Casey, *et al.*) 11: 1040
shear: Displacement calculations across a metamorphic core complex mylonite zone; Pinaleno Mountains, southeastern Arizona
(Naruk, Stephen J.) 7: 656

deposition of ores *see* mineral deposits, genesis

deserts *see under* eolian features *under* geomorphology

deuterium *see also* hydrogen

deuterium—geochemistry
ore-forming fluids: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471

Devonian *see also under* geochronology *under* California; *see also under* stratigraphy *under* Alberta

Devonian—stratigraphy
paleoecology: Effect of the Frasnian-Famennian extinction event on the stromatoporoids
(Stearn, Colin W.) 7: 677
— Frasnian/Famennian mass extinction and cold-water oceans; discussion and reply
(Raymond, Anne, *et al.*) 8: 777

diagenesis *see also* sedimentation

diagenesis—cementation
cyclic processes: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92
precipitation: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111
reefs: Modern marine dolomite cement in a north Jamaican fringing reef
(Mitchell, J. T., *et al.*) 6: 557

diagenesis—controls
changes of level: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673
tectonic controls: Transition from diagenesis to metamorphism in extensional and collision settings
(Robinson, Douglas) 9: 866

diagenesis—dolomitization
compaction: Saddle dolomite as a by-product of chemical compaction and thermochemical sulfate reduction
(Machel, Hans G.) 10: 936
cyclic processes: Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 262
kinetics: Kinetics of dolomitization
(Sibley, Duncan F., *et al.*) 12: 1112

diagenesis—effects
thermal maturity: Organic carbon losses during burial and thermal maturation of normal marine shales
(Raiswell, Robert, *et al.*) 9: 853

diagenesis—geochemistry
aluminum: Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295
organic materials: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722
— Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7
solution: Miocene sea-level falls related to the geologic history of Midway Atoll
(Lincoln, J. M., *et al.*) 5: 454

diagenesis—indicators
clay mineralogy: Distribution of maximum burial temperatures across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Lyons, Paul C., *et al.*) 2: 183
fluid inclusions: Experimental stretching of fluid inclusions in calcite; implications for diagenetic studies
(Prezbindowski, Dennis R., *et al.*) 4: 333
foraminifera: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731
vitrinite: Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event
(Summer, Neil S., *et al.*) 1: 30
— Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event; discussion and reply
(Smith, Gary A., *et al.*) 6: 581

diagenesis—mechanism
slump structures: Biopressured carbonate turbidite sediments; a mechanism for submarine slumping
(Nelson, Robert B., *et al.*) 9: 817

diagenesis—processes
compaction: Sedimentary model for the giant Broken Hill Pb-Zn deposit, Australia
(Wright, John V., *et al.*) 7: 598

diamonds—mineral exploration
greenstone belts: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

diastrophism *see* epeirogeny; orogeny; tectonics

diatom flora *see under* algal flora

differentiation *see under* magmas

dikes *see under* intrusions

dolomite *see under* carbonates *under* crystal growth; minerals

dolomitization *see under* diagenesis

drainage patterns *see under* fluvial features *under* geomorphology

earthquakes *see under* seismology; *see also* seismology; *see also under* seismology *under* California; Eastern U.S.; Mediterranean region; New Zealand

earthquakes—causes
fluid pressure: Hydroseismicity; a hypothesis for the role of water in the generation of intraplate seismicity
(Costain, J. K., *et al.*) 7: 618

East Pacific Ocean Islands—oceanography
reefs: Miocene sea-level falls related to the geologic history of Midway Atoll
(Lincoln, J. M., *et al.*) 5: 454

East Pacific Ocean Islands—stratigraphy
changes of level: Miocene sea-level falls related to the geologic history of Midway Atoll
(Lincoln, J. M., *et al.*) 5: 454
Miocene: Miocene sea-level falls related to the geologic history of Midway Atoll
(Lincoln, J. M., *et al.*) 5: 454

Eastern Hemisphere *see also* Africa; Antarctica; Arctic Ocean; Atlantic Ocean; Eurasia; Europe; Indian Ocean

Eastern U.S. *see also* Florida; Georgia; Maine; New Jersey; New York; North Carolina; Pennsylvania; South Carolina; Virginia; West Virginia

Eastern U.S.—oceanography
continental margin: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159

Eastern U.S.—seismology
earthquakes: Crustal subdivisions of the eastern and central United States and a seismic boundary hypothesis for eastern seismicity
(Hatcher, Robert D., Jr., *et al.*) 6: 528

Echinodermata *see also* echinoderms

echinoderms—crinoids
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647

ecology—changes
tropical environment: A modest proposal
(Nisbet, E. G., *et al.*) 10: 983

education—general
college-level education: Women in academia; students and professors revisited
(Crawford, Maria Luisa, *et al.*) 8: 771

Egypt—geophysical surveys
remote sensing: Mapping of serpentinites in the Eastern Desert of Egypt by using Landsat thematic mapper data; discussion and reply
(Greiling, Reinhard O., *et al.*) 9: 873

electron microscopy—applications
diagenesis: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731
geochronology: Scanning electron microscope method for rock-varnish dating
(Harrington, Charles D., *et al.*) 10: 967

electron microscopy—techniques
sample preparation: SEM analysis of weathered grains; pretreatment effects
(Cremeens, D. L., *et al.*) 5: 401

energy sources *see also* petroleum

engineering geology *see also* deformation; earthquakes; geodesy; geophysical methods; ground water

England—sedimentary petrology
diagenesis: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92

environmental geology *see also* conservation; ecology

Eocene—stratigraphy
unconformities: Global distribution of late Paleogene hiatuses; with Suppl. Data 87-12
(Keller, G., *et al.*) 3: 199

eolian features *see under* geomorphology

epeirogeny *see also* changes of level; orogeny; tectonics

epeirogeny—Quaternary
Spain: Response of Quaternary fluvial systems to differential epeirogenic uplift; Aguas and Feos river systems, Southeast Spain
(Harvey, A. M., *et al.*) 8: 689

erosion *see under* processes *under* geomorphology

eruptive rocks *see* igneous rocks

Ethiopia—geochronology
Neogene: Chow Bahir Rift; a "failed" rift in southern Ethiopia
(W-Gabriel, Giday, *et al.*) 5: 430

Ethiopia—structural geology
neotectonics: Chow Bahir Rift; a "failed" rift in southern Ethiopia
(W-Gabriel, Giday, *et al.*) 5: 430

Eurasia *see also* Black Sea

Eurasia—tectonophysics
plate tectonics: Geomorphic evidence for active faulting in the Altyn Tagh and northern Tibet and qualitative estimates of its contribution to the convergence of India and Eurasia
(Molnar, Peter, *et al.*) 3: 249

Europe *see also* Alps; Austria; England; Great Britain; Greece; Ireland; Scotland; Spain; Wales

Europe—sedimentary petrology
sedimentation: Coal depositional models for deltaic and alluvial plain sequences
(Fielding, Christopher R.) 7: 661

experimental studies *see under* carbonates *under* phase equilibria; *see under* deformation; geophysics; sea water; *see under* fossilization *under* paleontology; *see under* geologic thermometry *under* fluid inclusions; *see under* orthosilicates, olivine group *under* minerals

Far East *see also* the individual countries

faulting *see* faults

faults *see also* folds; tectonics

faults—displacements
active faults: Geomorphic evidence for active faulting in the Altyn Tagh and northern Tibet and qualitative estimates of its contribution to the convergence of India and Eurasia
(Molnar, Peter, *et al.*) 3: 249
— State of stress near the San Andreas Fault; implications for wrench tectonics
(Mount, Van S., *et al.*) 12: 1143
decollement: COCORP Arizona transect; strong crustal reflections and offset Moho beneath the transition zone
(Hauser, E. C., *et al.*) 12: 1103
— Displacement calculations across a metamorphic core complex mylonite zone; Pinaleno Mountains, southeastern Arizona
(Naruk, Stephen J.) 7: 656
— Fluid motion associated with Tertiary mylonitization and detachment faulting; $^{18}O/^{16}O$ evidence from the Picacho metamorphic core complex, Arizona
(Kerrich, R., *et al.*) 1: 58
— Off-axis volcanism in the Gregory Rift, East Africa; implications for models of continental rifting
(Bosworth, William) 5: 397
— Structural aspects of fluid-rock interactions in detachment zones
(Reynolds, Stephen J., *et al.*) 4: 362
— Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622
dip-slip faults: Stratigraphic and structural consequences of fault reversal; an example from the Franklinian Basin, Ellesmere Island
(De Paor, Declan G., *et al.*) 10: 948
normal faults: Fluid inclusion evidence for minimum 11 km vertical offset on the Wasatch Fault, Utah
(Parry, W. T., *et al.*) 1: 67
— Low-angle normal-fault system along the range front of the southwestern Galiuro Mountains in southeastern Arizona
(Dickinson, William R., *et al.*) 8: 727
— Normal-fault boundary of an Appalachian basement massif; results of COCORP profiling across the Pine Mountain Belt in western Georgia
(Nelson, K. D., *et al.*) 9: 832

overthrust faults: Two-dimensional modeling of the P-T-t paths of regional metamorphism in simple overthrust terrains
(Shi, Yaolin, *et al.*) 11: 1048
strike-slip faults: Brevard fault zone, Southern Appalachians; a medium-angle, dextral, Alleghanian shear zone
(Vauchez, Alain) 7: 669
— Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701
— Neogene tectonics and plate convergence in the eastern Mediterranean; new data from southern Turkey
(Kelling, Gilbert, *et al.*) 5: 425
— New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171
— Strike-slip faulting and block rotation in the Lake Mead fault system; discussion and reply
(Guth, Peter L., *et al.*) 6: 579
— Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553
— Temporally constrained tectonic rotations derived from magnetostratigraphic data; implications for the initiation of the Garlock Fault, California
(Burbank, Douglas W., *et al.*) 12: 1172
thrust faults: Alternative model of thrust-fault propagation
(Eisenstadt, Gloria, *et al.*) 7: 630
— Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220
— Continuation of Antler and Sonoma orogenic belts to the eastern Sierra Nevada, California, and Late Triassic thrusting in a compressional arch
(Schweickert, Richard A., *et al.*) 3: 270
— Ellesmerian(?) and Brookian deformation in the Franklin Mountains, northeastern Brooks Range, Alaska, and its bearing on the origin of the Canada Basin
(Oldow, J. S., *et al.*) 1: 37
— Inferences on sediment strength and fault friction from structures at the Aleutian Trench
(Davis, Dan M., *et al.*) 6: 517
— Segmentation and configuration of subducted lithosphere in Italy; an important control on thrust-belt and foredeep-basin evolution
(Royden, Leigh, *et al.*) 8: 714
— Thin-skinned tectonics in part of the Lachlan fold belt near Delegate, southeastern Australia
(Glen, R. A., *et al.*) 11: 1070
— Three-dimensional geometry and kinematics of experimental piggyback thrusting
(Mulugeta, Genene, *et al.*) 11: 1052
transcurrent faults: Transcurrent movements in the Burma-Andaman Sea region
(Hla Maung) 10: 911
transform faults: Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785
— Geometric test for Late Cretaceous-Paleogene intracontinental transform faulting in the Canadian Cordillera; discussion and reply
(Chamberlain, V. E., *et al.*) 2: 185
wrench faults: Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159
— Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941

faults—distribution
continental margin: Structure of the southeast margin of the Beaufort-Mackenzie Basin, Arctic Canada, from crustal seismic-reflection data
(Cook, Frederick A., *et al.*) 10: 931
cross faults: Origin of a major cross-element zone; Moroccan Rif
(Morley, C. K.) 8: 761
patterns: Gravity patterns and Precambrian structure in the North American central plains
(Thomas, M. D., *et al.*) 6: 489

faults—effects
gouge: Wear and gouge formation in brittle faulting
(Scholz, Christophter H.) 6: 493
mylonites: Migration of the seismic-aseismic transition during uniform and nonuniform extension of the continental lithosphere
(England, Philip, *et al.*) 4: 291
— Tectonically reset Rb-Sr system during Late Ordovician terrane assembly in Iapetus, western Ireland
(Kennan, P. S., *et al.*) 12: 1155
shear zones: Continent-ocean transition at the western Barents Sea/Svalbard continental margin
(Eldholm, Olav, *et al.*) 12: 1118
— Extension across the Eocene Okanagan crustal shear in southern British Columbia; discussion and reply
(Okulitch, Andrew V., *et al.*) 2: 187
— Menai Strait fault system; an early Caledonian terrane boundary in North Wales
(Gibbons, Wes) 8: 744
— Post-Nevadan deformation along the Bear Mountains fault zone; implications for the Foothills terrane, central Sierra Nevada, California
(Paterson, Scott R., *et al.*) 6: 513
— Thickening of fault zones; a mechanism of melange formation in accreting sediments
(Moore, J. Casey, *et al.*) 11: 1040
— Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India)
(Herren, Eveline) 5: 409

faults—interpretation
extension faults: Tectonic denudation of the Shuswap metamorphic terrane of southeastern British Columbia
(Brown, Richard L., *et al.*) 2: 142
growth faults: Early to Middle(?) Jurassic extensional tectonism in the western Great Basin; growth faulting and synorogenic deposition of the Dunlap Formation
(Oldow, John S., *et al.*) 8: 740

faults—mechanics
extension: Geometries of extension fault systems developed in model experiments
(McClay, K. R., *et al.*) 4: 341

faults—systems
block structures: Crustal subdivisions of the eastern and central United States and a seismic boundary hypothesis for eastern seismicity
(Hatcher, Robert D., Jr., *et al.*) 6: 528
— Deep crustal seismic reflection profiling, New England Orogen, eastern Australia; telescoping of the crust and a hidden, deep, layered sedimentary sequence; discussion and reply
(Murray, Cecil G., *et al.*) 12: 1180
— Glaciation and the evolution of the Canadian high Arctic landscape
(England, John) 5: 419
— Paleomagnetic and structural evidence for middle Tertiary counterclockwise block rotation in the Dixie Valley region, west-central Nevada
(Hudson, Mark R., *et al.*) 7: 638
grabens: Spreading structure of the Troodos ophiolite, Cyprus; some paleomagnetic constraints
(Allerton, Simon, *et al.*) 7: 593
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082

— Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987
(Grapes, R. H., *et al.*) 12: 1123
rift zones: Chow Bahir Rift; a "failed" rift in southern Ethiopia
(W-Gabriel, Giday, *et al.*) 5: 430

fission-track dating *see under* geochronology

Florida—geochronology
Ordovician: $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages
(Dallmeyer, R. D.) 11: 998
Proterozoic: Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

Florida—stratigraphy
Paleogene: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327
Paleozoic: Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

fluid inclusions *see also* inclusions

fluid inclusions—geochemistry
ore-forming fluids: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471

fluid inclusions—geologic thermometry
dolomitization: Saddle dolomite as a by-product of chemical compaction and thermochemical sulfate reduction
(Machel, Hans G.) 10: 936
experimental studies: Experimental stretching of fluid inclusions in calcite; implications for diagenetic studies
(Prezbindowski, Dennis R., *et al.*) 4: 333
molybdenum ores: Molybdenum mineralization in an active geothermal system, Valles Caldera, New Mexico
(Hulen, Jeffrey B., *et al.*) 8: 748
paleotemperature: Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130

fluid inclusions—P-T conditions
carbon dioxide: Fluid inclusion evidence for minimum 11 km vertical offset on the Wasatch Fault, Utah
(Parry, W. T., *et al.*) 1: 67
metasomatism: Metasomatism and partial melting in a subduction complex; Catalina Schist, Southern California
(Sorensen, Sorena S., *et al.*) 2: 115
syntectonic processes: Tectonically driven fluid flow in the Kodiak accretionary complex, Alaska
(Vrolijk, Peter) 5: 466

fluvial features *see under* geomorphology

folding *see* folds

folds *see also* faults; tectonics

folds—distribution
cuspate folds: Proterozoic cuspate basement-cover structure, Needle Mountains, Colorado
(Harris, C. W., *et al.*) 10: 950

folds—mechanics
flexural-slip: Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan
(Faure, Michel, *et al.*) 1: 49

folds—style
kink folds: Kink folding in an extended terrane; Tortilla Mountains, southeastern Arizona; discussions and replies
(Verbeek, Earl R., *et al.*) 9: 870

foliation *see also* folds; structural analysis

foraminifera *see also* foraminifers

foraminifers—biochemistry
isotopes: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

foraminifers—biostratigraphy
Cenozoic: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159
— Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694
Miocene: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731
— Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647
Paleocene: Danian faunal succession; planktonic foraminiferal response to a changing marine environment
(Gerstel, Jennifer, *et al.*) 7: 665
Paleogene: Global distribution of late Paleogene hiatuses; with Suppl. Data 87-12
(Keller, G., *et al.*) 3: 199
Tertiary: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634

foraminifers—paleoecology
Miocene: Equatorial Pacific deep-sea benthic foraminifera; faunal changes before the middle Miocene polar cooling; with Suppl. Data 87-34
(Thomas, E., *et al.*) 11: 1035
Tertiary: New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171

forests *see under* natural resources *under* conservation

fossils *see* appropriate fossil group

fuel resources *see also* petroleum; *see also under* economic geology *under* Pacific Coast

gabbros *see under* igneous rocks

gas inclusions *see* fluid inclusions

gems *see also* diamonds

genesis of ore deposits *see* mineral deposits, genesis

geochemistry—geochemical cycle
trace elements: Global trace-element biogeochemistry at the K/T boundary; oceanic and biotic response to a hypothetical meteorite impact
(Erickson, David J., III, *et al.*) 11: 1014

geochemistry—processes
diffusion: Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295
oxidation: Continental margin brine seeps; their geological consequences
(Paull, Charles K., *et al.*) 6: 545
solution: Salt as an agent in the development of cavernous weathering
(Young, Ann R. M.) 10: 962

geochemistry—properties
solubility: Carbon solubility in olivine; implications for upper mantle evolution
(Tingle, Tracy N., *et al.*) 4: 324

geochronology *see also* absolute age

geochronology—fission-track dating
bentonite: Fission-track dating of bentonites and bentonitic mudstones from the Morrison Formation in central Utah
(Kowallis, Bart J., *et al.*) 12: 1138
thermal history: Recent rapid uplift in the Bolivian Andes; evidence from fission-track dating
(Benjamin, Michael T., *et al.*) 7: 680

geochronology—methods
chemostratigraphy: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences
(Varekamp, Johan C., *et al.*) 11: 1018
electron microscopy: Scanning electron microscope method for rock-varnish dating
(Harrington, Charles D., *et al.*) 10: 967
geochronology—paleomagnetism
magnetostratigraphy: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
— Temporally constrained tectonic rotations derived from magnetostratigraphic data; implications for the initiation of the Garlock Fault, California
(Burbank, Douglas W., *et al.*) 12: 1172
geochronology—racemization
shells: Evaluation of amino-acid racemization/epimerization dating using radiocarbon-dated fossil land snails
(Goodfriend, Glenn A.) 8: 698
geochronology—tephrochronology
correlation: Correlation of the Peach Springs Tuff, a large-volume Miocene ignimbrite sheet in California and Arizona; discussion and reply
(Mittwede, Steven K., *et al.*) 4: 375
key beds: Late Quaternary caldera-forming eruptions in the eastern Aleutian Arc, Alaska
(Miller, Thomas P., *et al.*) 5: 434
geochronology—thermoluminescence
loess: Thermoluminescence dating of the Malan Loess at Zhaitang, China
(Lu Yanchou, *et al.*) 7: 603
geodesy—surveys
Maine: Reanalysis of crustal warping in coastal Maine
(Reilinger, Robert) 10: 958
New Zealand: Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987
(Grapes, R. H., *et al.*) 12: 1123
geologic hazards *see also* earthquakes; *see also under* engineering geology *under* Washington; *see also under* environmental geology *under* Chile
geologic thermometry *see under* fluid inclusions
geologic time *see* absolute age; geochronology
geology—practice
programs: Continental scientific drilling, the ADCOH Project, and large programs in the earth sciences
(Hatcher, Robert D., Jr.) 5: 473
techniques: Orientation of specimens; essential data for all fields of geology
(Prior, D. J., *et al.*) 9: 829
women: Women in academia; students and professors revisited
(Crawford, Maria Luisa, *et al.*) 8: 771
geomorphology *see also* glacial geology
geomorphology—eolian features
continental dunes: Airflow-terrain interactions through a mountain gap, with an example of eolian activity beneath an atmospheric hydraulic jump
(Gaylord, David R., *et al.*) 9: 789
deserts: Influences of eolian and pedogenic processes on the origin and evolution of desert pavements
(McFadden, Leslie D., *et al.*) 6: 504
geomorphology—fluvial features
alluvial fans: Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California
(Dorn, Ronald I., *et al.*) 2: 108
— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California; discussion and reply
(Wells, S. G., *et al.*) 12: 1178
drainage patterns: Effect of regional slope on drainage networks
(Phillips, Loren F., *et al.*) 9: 813
— Response of Quaternary fluvial systems to differential epeirogenic uplift; Aguas and Feos river systems, Southeast Spain
(Harvey, A. M., *et al.*) 8: 689
— Shifting of the Kosi River, northern India
(Wells, Neil A., *et al.*) 3: 204
floodplains: Role of tree dams in the construction of pseudo-terraces and variable geomorphic response to floods in Little River valley, Virginia
(Kochel, R. Craig, *et al.*) 8: 718
landform evolution: Late Quaternary alluvial history of the American West; toward a process paradigm
(Karlstrom, Eric T., *et al.*) 1: 88
geomorphology—landform evolution
tectonic controls: Geomorphic evidence for active faulting in the Altyn Tagh and northern Tibet and qualitative estimates of its contribution to the convergence of India and Eurasia
(Molnar, Peter, *et al.*) 3: 249
— Glaciation and the evolution of the Canadian high Arctic landscape
(England, John) 5: 419
geomorphology—mass movements
landslides: Drought, rain, and movement of a recurrent earthflow complex in New Zealand
(McSaveney, M. J., *et al.*) 7: 643
geomorphology—processes
erosion: Geomorphic and tectonic process rates; effects of measured time interval
(Gardner, Thomas W., *et al.*) 3: 259
sedimentation: Sediment-yield history of a small basin in southern Utah, 1937-1976; implications for land management and geomorphology
(Hereford, Richard) 10: 954
geomorphology—shore features
coastlines: Reanalysis of crustal warping in coastal Maine
(Reilinger, Robert) 10: 958
inlets: Application of Landsat thematic mapper to inlet dynamics, Old Drum Inlet, North Carolina
(Wells, J. T., *et al.*) 9: 849
— Application of Landsat thematic mapper to inlet dynamics, Old Drum Inlet, North Carolina
(Wells, J. T., *et al.*) 9: 849
marine terraces: Uranium series ages of corals from the upper Pleistocene Mulege terrace, Baja California Sur, Mexico
(Ashby, James R., *et al.*) 2: 139
geomorphology—volcanic features
lava flows: Pipe vesicles in Hawaiian basaltic lavas; their origin and potential as paleoslope indicators
(Walker, George P.) 1: 84
geophysical methods—seismic methods
data processing: Geometry and subsurface lithology of southern Death Valley basin, California, based on refraction analysis of multichannel seismic data
(Geist, Eric L., *et al.*) 12: 1159
interpretation: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
geophysical surveys *see under* Arctic Ocean; Arizona; Atlantic Ocean; California; Chile; data processing; Egypt; Georgia; North Carolina; North Sea; Pacific Ocean; Queensland; South Carolina; *see* acoustical surveys *under* geophysical surveys *under* Pacific Ocean; *see* seismic surveys *under* geophysical surveys *under* Arctic Ocean; Arizona; Atlantic Ocean; California; data processing; Georgia; North Sea; Pacific Ocean; Queensland; South Carolina; *see* surveys *under* geophysical surveys *under* Pacific Ocean; *see also* geophysical methods
geophysics *see also* deformation
geophysics—experimental studies
carbon: Carbon solubility in olivine; implications for upper mantle evolution
(Tingle, Tracy N., *et al.*) 4: 324
Georgia—geophysical surveys
seismic surveys: Normal-fault boundary of an Appalachian basement massif; results of COCORP profiling across the Pine Mountain Belt in western Georgia
(Nelson, K. D., *et al.*) 9: 832

Georgia—stratigraphy
Paleogene: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327
geosynclines *see also* orogeny; tectonics
geothermics *see* heat flow
glacial geology *see also* geomorphology
glacial geology—glaciation
glacial extent: Glaciation and the evolution of the Canadian high Arctic landscape
(England, John) 5: 419
— Restricted regional extent of the Laurentide ice sheet in the Great Lakes basins during early Wisconsin glaciation
(Eyles, Nicholas, *et al.*) 6: 537
ice movement: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634
glacial geology—periglacial features
pingos: Pleistocene pingo scars in Pennsylvania
(Marsh, Ben) 10: 945
glaciation *see under* glacial geology
global tectonics *see* plate tectonics
gold ores *see also under* economic geology *under* British Columbia; Canadian Shield; South Africa; Yukon Territory
Gondwana *see under* continental drift
grabens *see under* systems *under* faults
granites *see under* igneous rocks
Great Basin *see also* the individual states
Great Basin—economic geology
metal ores: Lithophile-element mineralization associated with Late Cretaceous two-mica granites in the Great Basin; with Suppl. Data 87-16
(Barton, Mark D.) 4: 337
Great Basin—stratigraphy
Jurassic: Early to Middle(?) Jurassic extensional tectonism in the western Great Basin; growth faulting and synorogenic deposition of the Dunlap Formation
(Oldow, John S., *et al.*) 8: 740
Great Britain *see also* England; Scotland; Wales
Great Britain—oceanography
continental shelf: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
Great Britain—sedimentary petrology
diagenesis: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92
Great Lakes region *see also* the individual states and provinces
Great Lakes region—geomorphology
glacial geology: Restricted regional extent of the Laurentide ice sheet in the Great Lakes basins during early Wisconsin glaciation
(Eyles, Nicholas, *et al.*) 6: 537
Great Plains *see also* the individual states and provinces
Great Plains—structural geology
neotectonics: Late Miocene reactivation of ancestral Rocky Mountain structures in the Texas Panhandle; a response to Basin and Range extension
(Budnik, Roy T.) 2: 163
Great Plains—tectonophysics
crust: Gravity patterns and Precambrian structure in the North American central plains
(Thomas, M. D., *et al.*) 6: 489
Greece—stratigraphy
Pliocene: Use of ostracodes to recognize downslope contamination in paleobathymetry and a preliminary reappraisal of the paleodepth of the Prasas Marls (Pliocene), Crete, Greece; discussion and reply
(Kontrovitz, Mervin, *et al.*) 4: 377
Quaternary: Quaternary deformation of the Isthmus and Gulf of Corinthos (Greece)
(Mariolakos, I., *et al.*) 3: 225
Greece—structural geology
neotectonics: Quaternary deformation of the Isthmus and Gulf of Corinthos (Greece)
(Mariolakos, I., *et al.*) 3: 225
ground water *see also* hydrology
ground water—levels
effects: Hydroseismicity; a hypothesis for the role of water in the generation of intraplate seismicity
(Costain, J. K., *et al.*) 7: 618
Gulf Coastal Plain *see also* the individual states and countries
Gulf of Mexico—geochemistry
sea water: Continental margin brine seeps; their geological consequences
(Paull, Charles K., *et al.*) 6: 545
Hawaii—petrology
inclusions: Glass in garnet pyroxenite xenoliths from Kaula Island, Hawaii; product of infiltration of host nephelinite
(Garcia, Michael O., *et al.*) 10: 904
lava: Pipe vesicles in Hawaiian basaltic lavas; their origin and potential as paleoslope indicators
(Walker, George P.) 1: 84
Hawaii—stratigraphy
biogeography: Biogeographic complexity in Triassic bivalves of the Wallowa Terrane, northwestern United States; oceanic islands, not continents, provide the best analogues
(Newton, C. Carolyn R.) 12: 1126
heat flow *see also under* tectonophysics *under* California
heat flow—interpretation
plate convergence: Landward vergence in accretionary prisms; the role of the backstop and thermal history
(Byrne, Tim, *et al.*) 12: 1163
terranes: Influence of deformation on pressure-temperature paths of metamorphism
(Chamberlain, C. Page, *et al.*) 1: 42
thermal regime: Transition from diagenesis to metamorphism in extensional and collision settings
(Robinson, Douglas) 9: 866
heat flow—theoretical studies
subduction zones: Thermal effects of metamorphic fluids in subduction zones
(Peacock, Simon M.) 11: 1057
Himalayas *see also* the individual countries
Himalayas—structural geology
tectonics: Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India)
(Herren, Eveline) 5: 409
Holocene *see also under* geochronology *under* Alaska; Alberta; Black Sea; Israel; *see also under* stratigraphy *under* Mediterranean region
hot springs *see* thermal waters *under* hydrogeology *under* California
hydrogen *see also* deuterium
hydrogen—isotopes
D/H: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471
hydrogeology *see also* ground water; hydrology
hydrology *see also* ground water
hydrology—surveys
California: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences
(Varekamp, Johan C., *et al.*) 11: 1018
Kosi Basin: Shifting of the Kosi River, northern India
(Wells, Neil A., *et al.*) 3: 204
Utah: Sediment-yield history of a small basin in southern Utah, 1937-1976; implications for land management and geomorphology
(Hereford, Richard) 10: 954
hydrothermal alteration *see under* processes *under* metasomatism
hydrothermal processes *see under* gold ores *under* mineral deposits, genesis; *see under* molybdenum ores *under* mineral deposits, genesis
Iberian Peninsula *see also* Spain

ice ages *see* glacial geology

ichnofossils—biostratigraphy
Cambrian: Early Cambrian age for synrift deposits of the Chilhowee Group of southwestern Virginia
(Simpson, Edward L., *et al.*) 2: 123

Idaho—structural geology
tectonics: Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220
— Extensional deformation with northwest vergence, Pioneer core complex, central Idaho; discussion and reply
(Pavlis, Terry L., *et al.*) 3: 283

Idaho—tectonophysics
crust: Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220

igneous rocks *see also* fluid inclusions; inclusions; intrusions; lava; magmas; metamorphic rocks; metasomatism; phase equilibria

igneous rocks—alkali gabbros
leucitite: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451

igneous rocks—basalts
textures: Two-stage vesiculation in the Cohassett Flow of the Grande Ronde Basalt, south-central Washington
(McMillan, Kent, *et al.*) 9: 809

igneous rocks—carbonatites
composition: Altered former alkalic carbonatite lava from Oldoinyo Lengai, Tanzania; inferences for calcite carbonatite lavas
(Dawson, J. B., *et al.*) 8: 765
geochemistry: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99

igneous rocks—gabbros
composition: Evidence for stratification of basic, silicic, and hybrid magmas in the Newark Island layered intrusion, Nain, Labrador; with Suppl. Data 87-17
(Wiebe, R. A.) 4: 349
mineral composition: Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota; discussion and reply
(Green, John C., *et al.*) 11: 1079

igneous rocks—geochemistry
trace elements: Regional middle Proterozoic enrichment of the subcontinental mantle source of igneous rocks from central Montana
(Dudas, Francis O., *et al.*) 1: 22
— Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553

igneous rocks—granites
composition: Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709
genesis: Granites of the batholiths of California; products of local assimilation and regional-scale crustal contamination
(Ague, Jay J., *et al.*) 1: 63
two-mica granite: Lithophile-element mineralization associated with Late Cretaceous two-mica granites in the Great Basin; with Suppl. Data 87-16
(Barton, Mark D.) 4: 337

igneous rocks—lamprophyres
genesis: Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941

igneous rocks—plutonic rocks
geochemistry: Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523

igneous rocks—pyroclastics
ignimbrite: Correlation of the Peach Springs Tuff, a large-volume Miocene ignimbrite sheet in California and Arizona; discussion and reply
(Mittwede, Steven K., *et al.*) 4: 375
pyroclastic flows: Discrimination of grain-size subpopulations in pyroclastic deposits
(Sheridan, Michael F., *et al.*) 4: 367
welded tuff: Compositional layers in the zoned magma chamber of the Grizzly Peak Tuff
(Fridrich, Christopher J., *et al.*) 4: 299

igneous rocks—rhyolites
geochemistry: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
textures: Internal textures of rhyolite flows as revealed by research drilling
(Manley, Curtis R., *et al.*) 6: 549

igneous rocks—textures
vesicular texture: Pipe vesicles; an alternate model for their origin
(Philpotts, Anthony R., *et al.*) 10: 971

igneous rocks—ultramafics
komatiite: Uniquely fresh 2.7 Ga komatiites from the Belingwe greenstone belt, Zimbabwe
(Nisbet, E. G., *et al.*) 12: 1147
ophiolite: Arabian Shield ophiolites and late Proterozoic microplate accretion; with Suppl. Data 87-15
(Pallister, John S., *et al.*) 4: 320
— Intrusive suite documented in the Troodos ophiolite plutonic complex, Cyprus
(Benn, K., *et al.*) 9: 821
— Magmas and magma chamber evolution, Troodos ophiolite, Cyprus
(Thy, P.) 4: 316
— Multiple dikes in the lower Kam Group, Yellowknife greenstone belt; evidence for Archean sea-floor spreading?; discussion and reply
(Kusky, Timothy M., *et al.*) 3: 280
— Nan River suture zone, northern Thailand; with Suppl. Data 87-32
(Barr, Sandra M., *et al.*) 10: 907
— Spreading structure of the Troodos ophiolite, Cyprus; some paleomagnetic constraints
(Allerton, Simon, *et al.*) 7: 593
— Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622
— Uranium-lead isotopic ages of plagiogranites from the Troodos ophiolite, Cyprus, and their tectonic significance
(Mukasa, Samuel B., *et al.*) 9: 825

igneous rocks—volcanic rocks
composition: Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496
geochemistry: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
— Strontium isotopic relations of bimodal volcanic rocks at Kikai Volcano in the Ryukyu Arc, Japan
(Notsu, Kenji, *et al.*) 4: 345
petrology: Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082

ignimbrite *see under* pyroclastics *under* igneous rocks

Illinois—geochemistry
organic materials: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7

inclusions *see also* fluid inclusions

inclusions—xenoliths
garnet pyroxenite: Glass in garnet pyroxenite xenoliths from Kaula Island, Hawaii; product of infiltration of host nephelinite
(Garcia, Michael O., *et al.*) 10: 904
mafic composition: Is the continental Moho the crust-mantle boundary?
(Griffin, William L., *et al.*) 3: 241

India—geochronology
Cretaceous: Critical evaluation of the age of the Deccan Traps, India; implications for flood-basalt volcanism and faunal extinctions
(Baksi, Ajoy K.) 2: 147
Paleogene: Critical evaluation of the age of the Deccan Traps, India; implications for flood-basalt volcanism and faunal extinctions
(Baksi, Ajoy K.) 2: 147

India—geomorphology
fluvial features: Shifting of the Kosi River, northern India
(Wells, Neil A., *et al.*) 3: 204

India—structural geology
tectonics: Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India)
(Herren, Eveline) 5: 409

India—tectonophysics
plate tectonics: Geomorphic evidence for active faulting in the Altyn Tagh and northern Tibet and qualitative estimates of its contribution to the convergence of India and Eurasia
(Molnar, Peter, *et al.*) 3: 249

Indian Ocean—oceanography
sediments: Dispersal of ash in the great Toba eruption, 75 ka
(Rose, W. I., *et al.*) 10: 913

Indian Ocean—tectonophysics
plate tectonics: Transcurrent movements in the Burma-Andaman Sea region
(Hla Maung) 10: 911

Indonesia—oceanography
ocean floors: Halimeda bioherms of the eastern Java Sea, Indonesia
(Roberts, H. H., *et al.*) 4: 371

Indonesia—petrology
volcanism: Dynamic deformation of volcanic ejecta from the Toba Caldera; possible relevance to Cretaceous/Tertiary boundary phenomena; discussion and reply
(Izett, Glen A., *et al.*) 1: 90

Indonesia—volcanology
Toba Lake: Dispersal of ash in the great Toba eruption, 75 ka
(Rose, W. I., *et al.*) 10: 913

intrusions *see also* igneous rocks; metamorphism; metasomatism

intrusions—batholiths
petrology: Granites of the batholiths of California; products of local assimilation and regional-scale crustal contamination
(Ague, Jay J., *et al.*) 1: 63

intrusions—dikes
dike swarms: Constraints on timing of deformation in the Benton Range, southeastern California, and implications to Nevadan orogenesis
(Renne, Paul R., *et al.*) 11: 1031
— Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941
distribution: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
emplacement: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
— Flow patterns of magma in dikes, Makhtesh Ramon, Israel
(Baer, Gidon, *et al.*) 6: 569
— Multiple dikes in the lower Kam Group, Yellowknife greenstone belt; evidence for Archean sea-floor spreading?; discussion and reply
(Kusky, Timothy M., *et al.*) 3: 280
paleomagnetism: Spreading structure of the Troodos ophiolite, Cyprus; some paleomagnetic constraints
(Allerton, Simon, *et al.*) 7: 593

intrusions—emplacement
effects: Origin of cratonic basins
(Klein, George deV., *et al.*) 12: 1094

intrusions—evolution
heterogeneity: Intrusive suite documented in the Troodos ophiolite plutonic complex, Cyprus
(Benn, K., *et al.*) 9: 821

intrusions—layered intrusions
composition: Evidence for stratification of basic, silicic, and hybrid magmas in the Newark Island layered intrusion, Nain, Labrador; with Suppl. Data 87-17
(Wiebe, R. A.) 4: 349
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota; discussion and reply
(Green, John C., *et al.*) 11: 1079

intrusions—plutons
absolute age: Timing of Acadian deformation in northeastern Maine; with Suppl. Data 87-06
(Hubacher, F. A., *et al.*) 1: 80
emplacement: Recent rapid uplift in the Bolivian Andes; evidence from fission-track dating
(Benjamin, Michael T., *et al.*) 7: 680
— Uranium-lead isotopic ages of plagiogranites from the Troodos Ophiolite, Cyprus, and their tectonic significance
(Mukasa, Samuel B., *et al.*) 9: 825
geochemistry: Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523
magnetic properties: Magnetic felsic intrusions associated with Canadian Archean gold deposits
(Hattori, Keiko) 12: 1107

Invertebrata *see also* ichnofossils

invertebrates *see also* brachiopods; conodonts; corals; echinoderms; foraminifers; mollusks; ostracods; radiolarians; trilobites

invertebrates—biostratigraphy
Paleozoic: (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications
(Benjamini, C., *et al.*) 10: 922

invertebrates—paleoecology
Triassic: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

Ireland—geochronology
Ordovician: Tectonically reset Rb-Sr system during Late Ordovician terrane assembly in Iapetus, western Ireland
(Kennan, P. S., *et al.*) 12: 1155

Ireland—oceanography
continental margin: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159

Ireland—structural geology
tectonics: Late Ordovician to Early Silurian amalgamation of the Dalradian and adjacent Ordovician rocks in the British Isles; discussion and reply
(Williams, D. Michael, *et al.*) 8: 775

iridium—geochemistry
trace elements: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896

isostasy *see also* changes of level; epeirogeny; *see also under* structural geology *under* Appalachians; Arizona

isotope dating *see* absolute age

isotopes *see also* absolute age; geochronology

isotopes—carbon
C-13/C-12: Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California
(Dorn, Ronald I., *et al.*) 2: 108
— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California; discussion and reply
(Wells, S. G., *et al.*) 12: 1178

isotopes—igneous rocks
carbonatites: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99
leucitite: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
plutonic rocks: Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523
volcanic rocks: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443

isotopes—manganese ores
stable isotopes: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722

isotopes—metamorphic rocks
calc-silicate composition: Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia
(Oliver, Nick, *et al.*) 9: 793

isotopes—mollusks
bivalves: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119

isotopes—oxygen
O-18/O-16: Fluid motion associated with Tertiary mylonitization and detachment faulting; $^{18}O/^{16}O$ evidence from the Picacho metamorphic core complex, Arizona
(Kerrich, R., *et al.*) 1: 58
— Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130

isotopes—sedimentary rocks
carbonate rocks: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
stable isotopes: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

isotopes—strontium
Sr-87/Sr-86: Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709
— Sr-isotopic composition of marbles from the Puerto Galera area (Mindoro, Philippines); additional evidence for a Paleozoic age of a metamorphic complex in the Philippine island arc
(Knittel, Ulrich, *et al.*) 2: 136
— Strontium isotopic relations of bimodal volcanic rocks at Kikai Volcano in the Ryukyu Arc, Japan
(Notsu, Kenji, *et al.*) 4: 345
— Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 252

isotopes—sulfur
S-34/S-32: Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393

Israel—geochronology
Holocene: Evaluation of amino-acid racemization/epimerization dating using radiocarbon-dated fossil land snails
(Goodfriend, Glenn A.) 8: 698

Israel—petrology
intrusions: Flow patterns of magma in dikes, Makhtesh Ramon, Israel
(Baer, Gidon, *et al.*) 6: 569

Israel—stratigraphy
archaeology: Ancient wells and their geoarchaeological significance in detecting tectonics of the Israel Mediterranean coastline region
(Nir, Yaacov, *et al.*) 1: 3

Israel—structural geology
neotectonics: Ancient wells and their geoarchaeological significance in detecting tectonics of the Israel Mediterranean coastline region
(Nir, Yaacov, *et al.*) 1: 3

Italy—petrology
igneous rocks: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
— Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model
(Lemoine, Marcel, *et al.*) 7: 622

Italy—tectonophysics
plate tectonics: Segmentation and configuration of subducted lithosphere in Italy; an important control on thrust-belt and foredeep-basin evolution
(Royden, Leigh, *et al.*) 8: 714

Jamaica—oceanography
reefs: Modern marine dolomite cement in a north Jamaican fringing reef
(Mitchell, J. T., *et al.*) 6: 557

Japan—structural geology
deformation: Progressive deformation in an accretionary complex; an example from the Shimanto Belt of eastern Kyushu, Southwest Japan
(Mackenzie, J. S., *et al.*) 4: 353

Japan—tectonophysics
plate tectonics: Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan
(Faure, Michel, *et al.*) 1: 49
— Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan; and Kinematic model for the opening of the Sea of Japan and bending of the Japanese islands; discussion and replies
(Choi, D. R., *et al.*) 10: 981
— Kinematic model for the opening of the Sea of Japan and the bending of the Japanese islands
(Celaya, Michael, *et al.*) 1: 53
— Kinematic model for the opening of the Sea of Japan and the bending of the Japanese islands; discussion and reply
(Courtillot, Vincent, *et al.*) 9: 879

Japan—volcanology
Kikai: Strontium isotopic relations of bimodal volcanic rocks at Kikai Volcano in the Ryukyu Arc, Japan
(Notsu, Kenji, *et al.*) 4: 345

Japan Sea—tectonophysics
plate tectonics: Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan
(Faure, Michel, *et al.*) 1: 49
— Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan; and Kinematic model for the opening of the Sea of Japan and bending of the Japanese islands; discussion and replies
(Choi, D. R., *et al.*) 10: 981
— Tectonic history of Ulleung Basin margin, East Sea (Sea of Japan)
(Chough, S. K., *et al.*) 1: 45
sea-floor spreading: Bent structural trends of Japan; flexural-slip folding related to the Neogene opening of the Sea of Japan; and Kinematic

model for the opening of the Sea of Japan and bending of the Japanese islands; discussion and replies
(Choi, D. R., *et al.*) 10: 981
— Kinematic model for the opening of the Sea of Japan and the bending of the Japanese islands
(Celaya, Michael, *et al.*) 1: 53
— Kinematic model for the opening of the Sea of Japan and the bending of the Japanese islands; discussion and reply
(Courtillot, Vincent, *et al.*) 9: 879

Jurassic *see also under* geochronology *under* California; Utah; *see also under* stratigraphy *under* British Columbia; Great Basin

Kenya—geochemistry
isotopes: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99

Korea—structural geology
neotectonics: Tectonic history of Ulleung Basin margin, East Sea (Sea of Japan)
(Chough, S. K., *et al.*) 1: 45

Labrador—petrology
magmas: Evidence for stratification of basic, silicic, and hybrid magmas in the Newark Island layered intrusion, Nain, Labrador; with Suppl. Data 87-17
(Wiebe, R. A.) 4: 349

lamprophyres *see under* igneous rocks

land use *see also* conservation; *see also under* environmental geology *under* Utah

landform evolution *see under* geomorphology

landslides *see under* mass movements *under* geomorphology

lava *see also* igneous rocks; magmas

lava—age
absolute age: Critical evaluation of the age of the Deccan Traps, India; implications for flood-basalt volcanism and faunal extinctions
(Baksi, Ajoy K.) 2: 147

lava—composition
phase equilibria: Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496

lava—distribution
continental shelf: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237

lava—flow mechanism
cooling: Pipe vesicles; an alternate model for their origin
(Philpotts, Anthony R., *et al.*) 10: 971
vesiculation: Two-stage vesiculation in the Cohassett Flow of the Grande Ronde Basalt, south-central Washington
(McMillan, Kent, *et al.*) 9: 809

lava—geochemistry
isotopes: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
trace elements: Altered former alkalic carbonatite lava from Oldoinyo Lengai, Tanzania; inferences for calcite carbonatite lavas
(Dawson, J. B., *et al.*) 8: 765
— Uniquely fresh 2.7 Ga komatiites from the Belingwe greenstone belt, Zimbabwe
(Nisbet, E. G., *et al.*) 12: 1147

lava—observations
pahoehoe: Pipe vesicles in Hawaiian basaltic lavas; their origin and potential as paleoslope indicators
(Walker, George P.) 1: 84
textures: Internal textures of rhyolite flows as revealed by research drilling
(Manley, Curtis R., *et al.*) 6: 549

lead—isotopes
ratios: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
— Regional middle Proterozoic enrichment of the subcontinental mantle source of igneous rocks from central Montana
(Dudas, Francis O., *et al.*) 1: 22

lead-zinc deposits *see also under* economic geology *under* New South Wales

limestone *see also under* carbonate rocks *under* sedimentary rocks

lineation *see also* structural analysis

lineation—style
boudinage: Tectonically driven fluid flow in the Kodiak accretionary complex, Alaska
(Vrolijk, Peter) 5: 466

liquid inclusions *see* fluid inclusions

loess *see under* clastic sediments *under* sediments; *see under* thermoluminescence *under* geochronology

magmas *see also* igneous rocks; intrusions; lava

magmas—contamination
assimilation: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
crust: Granites of the batholiths of California; products of local assimilation and regional-scale crustal contamination
(Ague, Jay J., *et al.*) 1: 63
subduction: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451

magmas—differentiation
fractional crystallization: Compositional layers in the zoned magma chamber of the Grizzly Peak Tuff
(Fridrich, Christopher J., *et al.*) 4: 299
— Evidence for stratification of basic, silicic, and hybrid magmas in the Newark Island layered intrusion, Nain, Labrador; with Suppl. Data 87-17
(Wiebe, R. A.) 4: 349
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota; discussion and reply
(Green, John C., *et al.*) 11: 1079
— Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709

magmas—evolution
heterogeneity: Intrusive suite documented in the Troodos ophiolite plutonic complex, Cyprus
(Benn, K., *et al.*) 9: 821
hybridization: Magmas and magma chamber evolution, Troodos ophiolite, Cyprus
(Thy, P.) 4: 316

magmas—genesis
spreading centers: Evidence for variations in magma production along oceanic spreading centers; a critical appraisal
(Karson, J. A., *et al.*) 2: 127

magmas—geochemistry
assimilation: Glass in garnet pyroxenite xenoliths from Kaula Island, Hawaii; product of infiltration of host nephelinite
(Garcia, Michael O., *et al.*) 10: 904
isotopes: Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523

magmas—properties
magma chambers: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
— Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496
— Possible effect of aspect ratios of magma chambers on eruption frequency; discussion and reply
(Pollard, D. D., *et al.*) 9: 877

magmas—viscosity
dikes: Flow patterns of magma in dikes, Makhtesh Ramon, Israel (Baer, Gidon, *et al.*) 6: 569
magnetism of rocks and minerals *see* paleomagnetism
Maine—structural geology
orogeny: Timing of Acadian deformation in northeastern Maine; with Suppl. Data 87-06 (Hubacher, F. A., *et al.*) 1: 80
Maine—tectonophysics
crust: Reanalysis of crustal warping in coastal Maine (Reilinger, Robert) 10: 958
Manitoba—sedimentary petrology
reefs: Encrusting corals on a latest Ordovician to earliest Silurian rocky shore, Southwest Hudson Bay, Manitoba, Canada (Johnson, Markes E., *et al.*) 1: 15
mantle *see also under* geochemistry *under* Africa; Montana; Zimbabwe
mantle—composition
carbon: Carbon solubility in olivine; implications for upper mantle evolution (Tingle, Tracy N., *et al.*) 4: 324
mantle—interpretation
transition zones: Is the continental Moho the crust-mantle boundary? (Griffin, William L., *et al.*) 3: 241
Mariana Islands—petrology
magmas: Depths and water content of magma chambers in the Aleutian and Mariana island arcs (Baker, Don R.) 6: 496
marine geology *see also* oceanography
marine geology—nomenclature
objectives: A proposal for modesty (Fisher, Robert L.) 6: 583
marine sediments *see under* sediments
mass movements *see under* geomorphology
mathematical geology—concepts
periodicity: Limitations to the statistical analysis of episodic and periodic models of geologic time series (Lutz, Timothy M.) 12: 1115
Mediterranean region *see also* the individual countries; Corsica
Mediterranean region—seismology
earthquakes: Is the Adriatic an African promontory? (Anderson, Helen) 3: 212
Mediterranean region—stratigraphy
Holocene: Ancient wells and their geoarchaeological significance in detecting tectonics of the Israel Mediterranean coastline region (Nir, Yaacov, *et al.*) 1: 3
Mediterranean region—tectonophysics
crust: Ultramafic and gabbroic ocean floor of the Ligurian Tethys (Alps, Corsica, Apennines); in search of a genetic model (Lemoine, Marcel, *et al.*) 7: 622
plate tectonics: Neogene tectonics and plate convergence in the eastern Mediterranean; new data from southern Turkey (Kelling, Gilbert, *et al.*) 5: 425
— Quaternary deformation of the Isthmus and Gulf of Corinthos (Greece) (Mariolakos, I., *et al.*) 3: 225
Mediterranean Sea *see also* Adriatic Sea; Corsica
meetings *see* symposia
melange *see under* interpretation *under* structural analysis; *see under* theoretical studies *under* deformation
mercury—geochemistry
lake sediments: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences (Varekamp, Johan C., *et al.*) 11: 1018
Mesozoic *see also* Cretaceous; Triassic; *see also under* geochronology *under* California; Mexico; *see also under* stratigraphy *under* Alps; Austria
metal ores *see also* platinum ores; *see also under* economic geology *under* Great Basin; New Zealand; Western U.S.
metamorphic rocks *see also* igneous rocks; metamorphism; metasomatism
metamorphic rocks—amphibolites
geochemistry: Trace-element zoning in a metamorphic garnet (Hickmott, D. D., *et al.*) 6: 573
metamorphic rocks—composition
calc-silicate composition: Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia (Oliver, Nick, *et al.*) 9: 793
metamorphic rocks—distribution
metamorphic belts: Deep crustal response to continental collision; the Limpopo Belt of Southern Africa (Van Reenen, D. D., *et al.*) 1: 11
terranes: Continental rifting and the Archean-Proterozoic transition (Blake, Tim S., *et al.*) 3: 229
metamorphic rocks—facies
blueschist facies: Blueschists and eclogites; discussion and reply (Brothers, R. N., *et al.*) 8: 773
granulite facies: Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks (Whitney, P. R., *et al.*) 6: 500
metamorphic rocks—granulites
genesis: Origin and evolution of granulites in normal and thickened crusts (Ellis, D. J.) 2: 167
metamorphic rocks—lithostratigraphy
Cretaceous: Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence (Stone, Paul, *et al.*) 6: 561
Mesozoic: Age and tectonic setting of Mesozoic metavolcanic and metasedimentary rocks, northern White Mountains, California (Hanson, R. Brooks, *et al.*) 11: 1074
Paleosols: Metamorphosed soils as stratigraphic indicators in deformed terranes; an example from the Eastern Alps (Barrientos, Ximena, *et al.*) 9: 841
Paleozoic: Continuation of Antler and Sonoma orogenic belts to the eastern Sierra Nevada, California, and Late Triassic thrusting in a compressional arch (Schweickert, Richard A., *et al.*) 3: 270
— (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications (Benjamini, C., *et al.*) 10: 922
metamorphic rocks—marbles
geochemistry: Sr-isotopic composition of marbles from the Puerto Galera area (Mindoro, Philippines); additional evidence for a Paleozoic age of a metamorphic complex in the Philippine island arc (Knittel, Ulrich, *et al.*) 2: 136
metamorphic rocks—metaigneous rocks
genesis: Multiple dikes in the lower Kam Group, Yellowknife greenstone belt; evidence for Archean sea-floor spreading?; discussion and reply (Kusky, Timothy M., *et al.*) 3: 280
metamorphic rocks—metaplutonic rocks
magnetic properties: Magnetic felsic intrusions associated with Canadian Archean gold deposits (Hattori, Keiko) 12: 1107
metamorphic rocks—metasedimentary rocks
metabentonite: Distribution of maximum burial temperature across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply (Karig, D. E., *et al.*) 3: 278
metapelite: Mineralogic domains in very low grade pelitic rocks (Juster, Thomas C.) 11: 1010
textures: Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India) (Herren, Eveline) 5: 409
metamorphic rocks—mineral assemblages
zoning: Thermo-tectonic evolution of a metamorphic internal zone documented by axial projections and petrological P-T paths, Wopmay Orogen, Northwest Canada (St-Onge, M. R., *et al.*) 2: 155

metamorphic rocks—petrology
terranes: Metasomatism and partial melting in a subduction complex; Catalina Schist, Southern California
(Sorensen, Sorena S., *et al.*) 2: 115

metamorphic rocks—schists
blueschist: Nan River suture zone, northern Thailand; with Suppl. Data 87-32
(Barr, Sandra M., *et al.*) 10: 907

metamorphic rocks—textures
fabric: Extent of the Nevadan Orogeny, central Sierra Nevada, California
(Tobisch, Othmar T., *et al.*) 2: 132
— Late Cretaceous to early Tertiary ductile deformation; Catalina-Rincon metamorphic core complex, southeastern Arizona
(Bykerk-Kauffman, Ann, *et al.*) 5: 462

metamorphism *see also* metamorphic rocks; metasomatism

metamorphism—burial metamorphism
temperature: Distribution of maximum burial temperature across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Karig, D. E., *et al.*) 3: 278
thermal history: Distribution of maximum burial temperatures across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Lyons, Paul C., *et al.*) 2: 183

metamorphism—grade
high-grade metamorphism: Deep crustal response to continental collision; the Limpopo Belt of Southern Africa
(Van Reenen, D. D., *et al.*) 1: 11
low-grade metamorphism: Mineralogic domains in very low grade pelitic rocks
(Juster, Thomas C.) 11: 1010
— Transition from diagenesis to metamorphism in extensional and collision settings
(Robinson, Douglas) 9: 866

metamorphism—mechanism
processes: Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia
(Oliver, Nick, *et al.*) 9: 793

metamorphism—P-T conditions
indicators: Trace-element zoning in a metamorphic garnet
(Hickmott, D. D., *et al.*) 6: 573
variations: Influence of deformation on pressure-temperature paths of metamorphism
(Chamberlain, C. Page, *et al.*) 1: 42

metamorphism—prograde metamorphism
evolution: Origin and evolution of granulites in normal and thickened crusts
(Ellis, D. J.) 2: 167
subduction zones: Thermal effects of metamorphic fluids in subduction zones
(Peacock, Simon M.) 11: 1057

metamorphism—regional metamorphism
evolution: Thermo-tectonic evolution of a metamorphic internal zone documented by axial projections and petrological P-T paths, Wopmay Orogen, Northwest Canada
(St-Onge, M. R., *et al.*) 2: 155
grade: Zanskar shear zone; northeast-southwest extension within the Higher Himalayas (Ladakh, India)
(Herren, Eveline) 5: 409
P-T conditions: Two-dimensional modeling of the P-T-t paths of regional metamorphism in simple overthrust terrains
(Shi, Yaolin, *et al.*) 11: 1048

metamorphism—shock metamorphism
endogene processes: Dynamic deformation of volcanic ejecta from the Toba Caldera; possible relevance to Cretaceous/Tertiary boundary phenomena; discussion and reply
(Izett, Glen A., *et al.*) 1: 90
spherules: Early Archean silicate spherules of probable impact origin, South Africa and Western Australia; discussions and replies
(French, Bevan M., *et al.*) 2: 178

metamorphism—thermal metamorphism
thermal maturity: Thermal maturity of the Cambria Slab, an inferred trench-slope basin in Central California
(Underwood, Michael B., *et al.*) 3: 216

metasomatic rocks *see also* igneous rocks; metamorphic rocks; metamorphism; metasomatism

metasomatic rocks—serpentinite
distribution: Mapping of serpentinites in the Eastern Desert of Egypt by using Landsat thematic mapper data; discussion and reply
(Greiling, Reinhard O., *et al.*) 9: 873

metasomatism *see also* metamorphism; metasomatic rocks

metasomatism—environment
subduction zones: Metasomatism and partial melting in a subduction complex; Catalina Schist, Southern California
(Sorensen, Sorena S., *et al.*) 2: 115

metasomatism—processes
hydrothermal alteration: Fluid inclusion evidence for minimum 11 km vertical offset on the Wasatch Fault, Utah
(Parry, W. T., *et al.*) 1: 67
— Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks
(Whitney, P. R., *et al.*) 6: 500
mylonitization: Fluid motion associated with Tertiary mylonitization and detachment faulting; $^{18}O/^{16}O$ evidence from the Picacho metamorphic core complex, Arizona
(Kerrich, R., *et al.*) 1: 58

meteorites *see also* tektites

meteorology—winds
effects: Airflow-terrain interactions through a mountain gap, with an example of eolian activity beneath an atmospheric hydraulic jump
(Gaylord, David R., *et al.*) 9: 789

methods *see under* geochronology; petrology; structural geology

Mexico—geochronology
Mesozoic: U-Pb ages of granitoid clasts in upper Mesozoic arc-derived strata of the Vizcaino Peninsula, Baja California, Mexico
(Kimbrough, David L., *et al.*) 1: 26
Pleistocene: Uranium series ages of corals from the upper Pleistocene Mulege terrace, Baja California Sur, Mexico
(Ashby, James R., *et al.*) 2: 139

Mexico—stratigraphy
changes of level: Uranium series ages of corals from the upper Pleistocene Mulege terrace, Baja California Sur, Mexico
(Ashby, James R., *et al.*) 2: 139

Mexico—structural geology
tectonics: Tectonic interpretation of the westernmost part of the Ouachita-Marathon (Hercynian) orogenic belt, West Texas-Mexico
(Shurbet, D. H., *et al.*) 5: 458

Micronesia *see also* Mariana Islands

Middle East *see also* Cyprus; Israel; Turkey

Midwest *see also* Illinois; Minnesota

Midwest—tectonophysics
crust: Crustal subdivisions of the eastern and central United States and a seismic boundary hypothesis for eastern seismicity
(Hatcher, Robert D., Jr., *et al.*) 6: 528

mineral deposits, genesis—controls
structural controls: Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701

mineral deposits, genesis—gold ores
affinities: Magnetic felsic intrusions associated with Canadian Archean gold deposits
(Hattori, Keiko) 12: 1107
hydrothermal processes: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471
metamorphic processes: Problems with the placer model for Witwatersrand gold
(Phillips, G. Neil, *et al.*) 11: 1027

mineral deposits, genesis—interpretation
greenstone belts: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

mineral deposits, genesis—lead-zinc deposits
sedimentary processes: Sedimentary model for the giant Broken Hill Pb-Zn deposit, Australia
(Wright, John V., *et al.*) 7: 598

mineral deposits, genesis—manganese ores
geochemical controls: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722

mineral deposits, genesis—metal ores
patterns: Lithophile-element mineralization associated with Late Cretaceous two-mica granites in the Great Basin; with Suppl. Data 87-16
(Barton, Mark D.) 4: 337

mineral deposits, genesis—molybdenum ores
hydrothermal processes: Molybdenum mineralization in an active geothermal system, Valles Caldera, New Mexico
(Hulen, Jeffrey B., *et al.*) 8: 748

mineral exploration—concepts
greenstone belts: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

mineral exploration—ore guides
gold ores: Magnetic felsic intrusions associated with Canadian Archean gold deposits
(Hattori, Keiko) 12: 1107
olistostromes: Problems of recognition of olistostromes; an example from the lower Pit Formation, eastern Klamath Mountains, California
(Eastoe, Christopher J., *et al.*) 6: 541

mineral prospecting *see* mineral exploration

mineral resources *see also* the individual deposits

minerals *see also* crystal growth

minerals—carbonates
aragonite: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111
dolomite: Kinetics of dolomitization
(Sibley, Duncan F., *et al.*) 12: 1112
— Modern marine dolomite cement in a north Jamaican fringing reef
(Mitchell, J. T., *et al.*) 6: 557
— Saddle dolomite as a by-product of chemical compaction and thermochemical sulfate reduction
(Machel, Hans G.) 10: 936
ikaite: Ikaite pseudomorphs in the Zaire deep-sea fan; an intermediate between calcite and porous calcite
(Jansen, J. H. F., *et al.*) 3: 245
magnesian calcite: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111

minerals—hydrates
ikaite: Ikaite pseudomorphs in the Zaire deep-sea fan; an intermediate between calcite and porous calcite
(Jansen, J. H. F., *et al.*) 3: 245

minerals—orthosilicates, garnet group
chemical composition: Trace-element zoning in a metamorphic garnet
(Hickmott, D. D., *et al.*) 6: 573

minerals—orthosilicates, olivine group
experimental studies: Carbon solubility in olivine; implications for upper mantle evolution
(Tingle, Tracy N., *et al.*) 4: 324
phase equilibria: Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71

minerals—oxides
magnetite: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7

Minnesota—petrology
magmas: Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota; discussion and reply
(Green, John C., *et al.*) 11: 1079

Miocene *see also under* geochronology *under* California; *see also under* stratigraphy *under* Arizona; Atlantic Ocean; California; East Pacific Ocean Islands; North Carolina; Oregon; Pacific Ocean; Texas

miospores *see under* palynomorphs

Mississippi—geochemistry
organic materials: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7

Mississippi Valley—geochemistry
trace elements: Chemical correlation of K-bentonite beds in the Middle Ordovician Decorah Subgroup, Upper Mississippi Valley
(Kolata, Dennis R., *et al.*) 3: 208

Mississippi Valley—stratigraphy
Ordovician: Chemical correlation of K-bentonite beds in the Middle Ordovician Decorah Subgroup, Upper Mississippi Valley
(Kolata, Dennis R., *et al.*) 3: 208

Mississippian *see also under* stratigraphy *under* North America; West Virginia

Mohorovicic discontinuity *see also* crust; mantle; *see also under* tectonophysics *under* Arizona

Mohorovicic discontinuity—depth
depth indicators: Is the continental Moho the crust-mantle boundary?
(Griffin, William L., *et al.*) 3: 241

mollusks—biostratigraphy
Cambrian: Early Cambrian age for synrift deposits of the Chilhowee Group of southwestern Virginia
(Simpson, Edward L., *et al.*) 2: 123

mollusks—bivalves
Phanerozoic: Phanerozoic trends in background extinction; consequence of an aging fauna; discussion and reply
(Van Valen, Leigh M., *et al.*) 9: 875
Pleistocene: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119
Triassic: Biogeographic complexity in Triassic bivalves of the Wallowa Terrane, northwestern United States; oceanic islands, not continents, provide the best analogues
(Newton, Cathryn R.) 12: 1126
— Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

mollusks—gastropods
Holocene: Evaluation of amino-acid racemization/epimerization dating using radiocarbon-dated fossil land snails
(Goodfriend, Glenn A.) 8: 698

molybdenum ores *see also under* economic geology *under* New Mexico

Montana—geochemistry
mantle: Regional middle Proterozoic enrichment of the subcontinental mantle source of igneous rocks from central Montana
(Dudas, Francis O., *et al.*) 1: 22

Montana—stratigraphy
Cretaceous: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090
— Transport-induced abrasion of fossil reptilian teeth; implications for the existence of Tertiary dinosaurs in the Hell Creek Formation, Montana
(Argast, Scott, *et al.*) 10: 927
Paleocene: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090

Tertiary: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090

Montana—structural geology
tectonics: Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220

Montana—tectonophysics
crust: Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220

Morocco—stratigraphy
Carboniferous: Early Carboniferous basins of the Atlas-Meseta domain (Morocco); sedimentary model and geodynamic evolution
(Beauchamp, Jacques, *et al.*) 9: 797

Morocco—structural geology
tectonics: Origin of a major cross-element zone; Moroccan Rif
(Morley, C. K.) 8: 761

Morocco—tectonophysics
crust: Origin of a major cross-element zone; Moroccan Rif
(Morley, C. K.) 8: 761

mud volcanoes *see also* volcanology

nannofossils *see under* algal flora

natural resources *see under* conservation

neodymium—isotopes
Nd-144/Nd-143: Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
— Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99
— Regional middle Proterozoic enrichment of the subcontinental mantle source of igneous rocks from central Montana
(Dudas, Francis O., *et al.*) 1: 22

Neogene *see also under* geochronology *under* Ethiopia; *see also under* stratigraphy *under* New Zealand

neotectonics *see also* changes of level; tectonics; *see also under* structural geology *under* Africa; Andes; Arizona; Basin and Range Province; California; China; Ethiopia; Great Plains; Greece; Israel; Korea; Nevada; New Zealand; Oregon; Spain; Texas; Turkey; Utah; Western U.S.

Nevada—geochronology
Quaternary: Scanning electron microscope method for rock-varnish dating
(Harrington, Charles D., *et al.*) 10: 967

Nevada—sedimentary petrology
sedimentary structures: Biopressured carbonate turbidite sediments; a mechanism for submarine slumping
(Nelson, Robert B., *et al.*) 9: 817

Nevada—stratigraphy
Tertiary: Paleomagnetic and structural evidence for middle Tertiary counterclockwise block rotation in the Dixie Valley region, west-central Nevada
(Hudson, Mark R., *et al.*) 7: 638

Nevada—structural geology
faults: Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553
neotectonics: Strike-slip faulting and block rotation in the Lake Mead fault system; discussion and reply
(Guth, Peter L., *et al.*) 6: 579
tectonics: Early to Middle(?) Jurassic extensional tectonism in the western Great Basin; growth faulting and synorogenic deposition of the Dunlap Formation
(Oldow, John S., *et al.*) 8: 740

New Brunswick—stratigraphy
Proterozoic: Model for the Precambrian evolution of the Avalon Terrane in southern New Brunswick, Canada
(Nance, R. Damian) 8: 753

New Brunswick—tectonophysics
plate tectonics: Model for the Precambrian evolution of the Avalon Terrane in southern New Brunswick, Canada
(Nance, R. Damian) 8: 753

New Jersey—oceanography
continental slope: Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509

New Jersey—stratigraphy
changes of level: Middle to late Miocene canyon cutting on the New Jersey continental slope; biostratigraphic and seismic stratigraphic evidence
(Miller, Kenneth G., *et al.*) 6: 509

New Mexico—economic geology
molybdenum ores: Molybdenum mineralization in an active geothermal system, Valles Caldera, New Mexico
(Hulen, Jeffrey B., *et al.*) 8: 748

New Mexico—geochronology
Quaternary: Scanning electron microscope method for rock-varnish dating
(Harrington, Charles D., *et al.*) 10: 967

New Mexico—petrology
lava: Internal textures of rhyolite flows as revealed by research drilling
(Manley, Curtis R., *et al.*) 6: 549

New South Wales—economic geology
lead-zinc deposits: Sedimentary model for the giant Broken Hill Pb-Zn deposit, Australia
(Wright, John V., *et al.*) 7: 598

New South Wales—geomorphology
weathering: Salt as an agent in the development of cavernous weathering
(Young, Ann R. M.) 10: 962

New South Wales—structural geology
tectonics: Thin-skinned tectonics in part of the Lachlan fold belt near Delegate, southeastern Australia
(Glen, R. A., *et al.*) 11: 1070

New York—petrology
metamorphism: Distribution of maximum burial temperature across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Karig, D. E., *et al.*) 3: 278

New York—stratigraphy
Paleozoic: Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130

New York—structural geology
deformation: Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks
(Whitney, P. R., *et al.*) 6: 500
tectonics: Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130

New Zealand—economic geology
metal ores: Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701

New Zealand—engineering geology
slope stability: Drought, rain, and movement of a recurrent earthflow complex in New Zealand
(McSaveney, M. J., *et al.*) 7: 643

New Zealand—geochronology
Tertiary: Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941

New Zealand—oceanography
continental shelf: Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610

New Zealand—seismology
earthquakes: Subcrustal earthquakes in the central South Island, New Zealand, and the root of the Southern Alps
(Reyners, Martin) 12: 1168
— Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987
(Grapes, R. H., *et al.*) 12: 1123

New Zealand—stratigraphy
Cenozoic: Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694
changes of level: Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610
Neogene: Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610

New Zealand—structural geology
neotectonics: Earthquake rupturing as a mineralizing agent in hydrothermal systems
(Sibson, Richard H.) 8: 701
— Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987
(Grapes, R. H., *et al.*) 12: 1123
tectonics: Lamprophyre dike intrusion and the age of the Alpine Fault, New Zealand
(Cooper, A. F., *et al.*) 10: 941

New Zealand—tectonophysics
crust: Subcrustal earthquakes in the central South Island, New Zealand, and the root of the Southern Alps
(Reyners, Martin) 12: 1168
plate tectonics: Archean synsedimentary tectonic deformation; a comparison with the Quaternary
(Lamb, Simon) 6: 565

Newfoundland—oceanography
continental margin: Inversion tectonics on the continental margin east of Newfoundland
(Grant, A. C.) 9: 845

Newfoundland—stratigraphy
Cambrian: Definition of the Iapetus rift-drift transition in western Newfoundland
(Williams, Harold, *et al.*) 11: 1044

Newfoundland—tectonophysics
crust: Deep seismic reflection profile across the Northern Appalachians; discussion and reply
(Church, W. R., *et al.*) 2: 182

nomenclature *see under* bottom features *under* ocean floors; *see under* marine geology; oceanography

North America *see also* Appalachians; Atlantic Coastal Plain; Canada; Great Lakes region; Great Plains; Mexico; United States

North America—stratigraphy
Mississippian: Redefinition of the Meramecian/Chesterian boundary (Mississippian)
(Maples, Christopher G., *et al.*) 7: 647
Pennsylvanian: Sea-level curve for Pennsylvanian eustatic marine transgressive-regressive depositional cycles along Midcontinent outcrop belt, North America; discussion and reply
(Busch, Richard M., *et al.*) 3: 276

North America—structural geology
tectonics: Structural aspects of fluid-rock interactions in detachment zones
(Reynolds, Stephen J., *et al.*) 4: 362

North America—tectonophysics
crust: Gravity patterns and Precambrian structure in the North American central plains
(Thomas, M. D., *et al.*) 6: 489
plate tectonics: Evolution of the early Proterozoic Colorado Province; constraints from U-Pb geochronology; with Suppl. Data 87-31
(Reed, John C., Jr., *et al.*) 9: 861
— Geometric test for Late Cretaceous-Paleogene intracontinental transform faulting in the Canadian Cordillera; discussion and reply
(Chamberlain, V. E., *et al.*) 2: 185

North Carolina—geophysical surveys
remote sensing: Application of Landsat thematic mapper to inlet dynamics, Old Drum Inlet, North Carolina
(Wells, J. T., *et al.*) 9: 849

North Carolina—oceanography
continental shelf: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731

North Carolina—stratigraphy
Miocene: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731

North Sea—geophysical surveys
seismic surveys: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
— Iapetus suture located beneath the North Sea by BIRPS deep seismic reflection profiling
(Klemperer, Simon L., *et al.*) 3: 195

North Sea—tectonophysics
crust: Iapetus suture located beneath the North Sea by BIRPS deep seismic reflection profiling
(Klemperer, Simon L., *et al.*) 3: 195

Northern Hemisphere *see also* Africa; Arctic Ocean; Atlantic Ocean; Eurasia; Europe; North America; Pacific Ocean

Northwest Territories—geomorphology
landform evolution: Glaciation and the evolution of the Canadian high Arctic landscape
(England, John) 5: 419

Northwest Territories—oceanography
continental margin: Structure of the southeast margin of the Beaufort-Mackenzie Basin, Arctic Canada, from crustal seismic-reflection data
(Cook, Frederick A., *et al.*) 10: 931

Northwest Territories—stratigraphy
Archean: Multiple dikes in the lower Kam Group, Yellowknife greenstone belt; evidence for Archean sea-floor spreading?; discussion and reply
(Kusky, Timothy M., *et al.*) 3: 280

Northwest Territories—structural geology
faults: Stratigraphic and structural consequences of fault reversal; an example from the Franklinian Basin, Ellesmere Island
(De Paor, Declan G., *et al.*) 10: 948
tectonics: Continental transform tectonics; Great Slave Lake shear zone (ca. 1.9 Ga), Northwest Canada
(Hoffman, Paul F.) 9: 785
— Thermo-tectonic evolution of a metamorphic internal zone documented by axial projections and petrological P-T paths, Wopmay Orogen, Northwest Canada
(St-Onge, M. R., *et al.*) 2: 155

nuclear facilities *see also under* engineering geology *under* Washington

ocean basins—evolution
concepts: Hess, Menard, and Wegener; thoughts on thoughts in the plate tectonics revolution
(Allwardt, Alan) 5: 475
— Historical note on "Evolution ocean basins" preprint by H. H. Hess, 1906-1969
(Bowin, Carl) 5: 475

ocean floors *see also under* oceanography *under* Arctic Ocean; Atlantic Ocean; Indonesia; Pacific Ocean

ocean floors—bottom features
nomenclature: A proposal for modesty
(Fisher, Robert L.) 6: 583

oceanography—nomenclature
objectives: A proposal for modesty
(Fisher, Robert L.) 6: 583

oil *see* petroleum

oil and gas fields *see also* petroleum

Oligocene—stratigraphy
unconformities: Global distribution of late Paleogene hiatuses; with Suppl. Data 87-12
(Keller, G., *et al.*) 3: 199

olistostromes *see under* soft sediment deformation *under* sedimentary structures

ophiolite *see under* ultramafics *under* igneous rocks

Ordovician *see also under* geochronology *under* Florida; Ireland; *see also under* stratigraphy *under* Mississippi Valley

ore guides *see under* mineral exploration

Oregon—sedimentary petrology
diagenesis: Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event
(Summer, Neil S., *et al.*) 1: 30
— Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event; discussion and reply
(Smith, Gary A., *et al.*) 6: 581

Oregon—stratigraphy
Miocene: Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082
Triassic: Biogeographic complexity in Triassic bivalves of the Wallowa Terrane, northwestern United States; oceanic islands, not continents, provide the best analogues
(Newton, Cathryn R.) 12: 1126

Oregon—structural geology
neotectonics: Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082

organic materials *see also* petroleum

organic materials—alteration
thermal alteration: Organic carbon losses during burial and thermal maturation of normal marine shales
(Raiswell, Robert, *et al.*) 9: 853
thermal maturity: Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event
(Summer, Neil S., *et al.*) 1: 30
— Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event; discussion and reply
(Smith, Gary A., *et al.*) 6: 581

organic materials—amino acids
alteration: Evaluation of amino-acid racemization/epimerization dating using radiocarbon-dated fossil land snails
(Goodfriend, Glenn A.) 8: 698

organic materials—bitumens
alteration: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7

organic materials—genesis
sapropel: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea
(Calvert, S. E., *et al.*) 10: 918

organic materials—geochemistry
weathering: Effect of the advent and diversification of vascular land plants on mineral weathering through geologic time
(Knoll, Martin A., *et al.*) 12: 1099

orogeny *see also* epeirogeny; tectonics

orogeny—absolute age
Acadian Phase: Timing of Acadian deformation in northeastern Maine; with Suppl. Data 87-06
(Hubacher, F. A., *et al.*) 1: 80
Allegheny Orogeny: Alleghanian episode of K-bentonite illitization in the southern Appalachian Basin
(Elliott, W. Crawford, *et al.*) 8: 735
Nevadan Orogeny: Constraints on timing of deformation in the Benton Range, southeastern California, and implications to Nevadan orogenesis
(Renne, Paul R., *et al.*) 11: 1031

orogeny—evolution
Antler Orogeny: "Antler" allochthon in the Kootenay Arc?
(Gehrels, George E., *et al.*) 8: 769
Caledonian Orogeny: Menai Strait fault system; an early Caledonian terrane boundary in North Wales
(Gibbons, Wes) 8: 744
Nevadan Orogeny: Extent of the Nevadan Orogeny, central Sierra Nevada, California
(Tobisch, Othmar T., *et al.*) 2: 132
— Post-Nevadan deformation along the Bear Mountains fault zone; implications for the Foothills terrane, central Sierra Nevada, California
(Paterson, Scott R., *et al.*) 6: 513
Phanerozoic: Ellesmerian(?) and Brookian deformation in the Franklin Mountains, northeastern Brooks Range, Alaska, and its bearing on the origin of the Canada Basin
(Oldow, J. S., *et al.*) 1: 37
Wopmay Orogeny: Thermo-tectonic evolution of a metamorphic internal zone documented by axial projections and petrological P-T paths, Wopmay Orogen, Northwest Canada
(St-Onge, M. R., *et al.*) 2: 155

orogeny—mechanism
Antler Orogeny: "Antler" clastics in the Canadian Cordillera
(Gordey, S. P., *et al.*) 2: 103
— Continuation of Antler and Sonoma orogenic belts to the eastern Sierra Nevada, California, and Late Triassic thrusting in a compressional arch
(Schweickert, Richard A., *et al.*) 3: 270
Cordilleran Orogeny: Basement thrust sheets in the Clearwater orogenic zone, central Idaho and western Montana
(Skipp, Betty) 3: 220
orogenic belts: Orogen-parallel extension and oblique tectonics; the relation between stretching lineations and relative plate motions
(Ellis, Michael, *et al.*) 11: 1022
Ouachita Orogeny: Tectonic interpretation of the westernmost part of the Ouachita-Marathon (Hercynian) orogenic belt, West Texas-Mexico
(Shurbet, D. H., *et al.*) 5: 458
Taconic Orogeny: Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks
(Whitney, P. R., *et al.*) 6: 500

orogeny—periodicity
Avalonian Orogeny: Model for the Precambrian evolution of the Avalon Terrane in southern New Brunswick, Canada
(Nance, R. Damian) 8: 753

Ostracoda *see also* ostracods

ostracods—biostratigraphy
Pleistocene: Restricted regional extent of the Laurentide ice sheet in the Great Lakes basins during early Wisconsin glaciation
(Eyles, Nicholas, *et al.*) 6: 537

ostracods—paleoecology
Pliocene: Use of ostracodes to recognize downslope contamination in paleobathymetry and a preliminary reappraisal of the paleodepth of the Prasas Marls (Pliocene), Crete, Greece; discussion and reply
(Kontrovitz, Mervin, *et al.*) 4: 377

oxides *see under* minerals

oxygen—isotopes
O-18/O-16: Bacterially mediated diagenetic origin for chert-hosted manganese deposits in the Franciscan Complex, California Coast Ranges
(Hein, James R., *et al.*) 8: 722

— Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
— Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002
— Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471
— Fluid motion associated with Tertiary mylonitization and detachment faulting; $^{18}O/^{16}O$ evidence from the Picacho metamorphic core complex, Arizona
(Kerrich, R., *et al.*) 1: 58
— Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523
— Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia
(Oliver, Nick, *et al.*) 9: 793
— Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
— Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119
— Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130

P-T conditions *see under* granites *under* phase equilibria; *see under* metasedimentary rocks *under* phase equilibria; *see under* fluid inclusions; metamorphism; *see under* regional metamorphism *under* metamorphism

Pacific Coast *see also* the individual states and provinces

Pacific Coast—economic geology
fuel resources: Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event
(Summer, Neil S., *et al.*) 1: 30

Pacific Coast—structural geology
orogeny: "Antler" allochthon in the Kootenay Arc?
(Gehrels, George E., *et al.*) 8: 769

Pacific Ocean *see also* Japan Sea

Pacific Ocean—geophysical surveys
acoustical surveys: Crescentic dunes on the inner continental shelf off Northern California
(Cacchione, D. A., *et al.*) 12: 1134
seismic surveys: Halimeda bioherms of the eastern Java Sea, Indonesia
(Roberts, H. H., *et al.*) 4: 371
— Inferences on sediment strength and fault friction from structures at the Aleutian Trench
(Davis, Dan M., *et al.*) 5: 517
— Single-channel seismic reflection data from the East Pacific Rise axis between latitude 11°50′ and 12°54′N
(Avedik, Felix, *et al.*) 9: 857
surveys: Tectonic evolution of ridge-axis discontinuities by the meeting, linking, or self-decapitation of neighboring ridge segments
(Macdonald, K. C., *et al.*) 11: 993

Pacific Ocean—oceanography
ocean floors: Coulomb wedge model applied to the subduction of seamounts in the Japan Trench
(Lallemand, Serge, *et al.*) 11: 1065

Pacific Ocean—stratigraphy
Miocene: Equatorial Pacific deep-sea benthic foraminifera; faunal changes before the middle Miocene polar cooling; with Suppl. Data 87-34
(Thomas, E., *et al.*) 11: 1035
Pleistocene: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119

Pacific Ocean—tectonophysics
crust: Single-channel seismic reflection data from the East Pacific Rise axis between latitude 11°50′ and 12°54′N
(Avedik, Felix, *et al.*) 9: 857
plate tectonics: Coulomb wedge model applied to the subduction of seamounts in the Japan Trench
(Lallemand, Serge, *et al.*) 11: 1065
— Tectonic evolution of ridge-axis discontinuities by the meeting, linking, or self-decapitation of neighboring ridge segments
(Macdonald, K. C., *et al.*) 11: 993
sea-floor spreading: Tectonic evolution of ridge-axis discontinuities by the meeting, linking, or self-decapitation of neighboring ridge segments
(Macdonald, K. C., *et al.*) 11: 993

Pacific region *see also* the individual countries

Pacific region—tectonophysics
plate tectonics: Geologic constraints on the Cenozoic Antarctica-Australia-Pacific relative plate motion circuit
(Kamp, Peter J. J., *et al.*) 8: 694
— Landward vergence in accretionary prisms; the role of the backstop and thermal history
(Byrne, Tim, *et al.*) 12: 1163

Paleocene *see also under* stratigraphy *under* Alabama; Montana

Paleocene—stratigraphy
biostratigraphy: Danian faunal succession; planktonic foraminiferal response to a changing marine environment
(Gerstel, Jennifer, *et al.*) 7: 665

paleoclimatology—Cretaceous
Montana: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090
Western Interior: Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233

paleoclimatology—Devonian
Alberta: Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393
global: Frasnian/Famennian mass extinction and cold-water oceans; discussion and reply
(Raymond, Anne, *et al.*) 8: 777

paleoclimatology—Jurassic
Great Britain: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92

paleoclimatology—Miocene
North Carolina: BSEM evaluation of carbonate diagenesis; benthic foraminifera from the Miocene Pungo River Formation, North Carolina
(Showers, William J., *et al.*) 8: 731
Pacific Ocean: Equatorial Pacific deep-sea benthic foraminifera; faunal changes before the middle Miocene polar cooling; with Suppl. Data 87-34
(Thomas, E., *et al.*) 11: 1035
Texas: Vertebrate-bearing eolian unit from the Ogallala Group (Miocene) in northwestern Texas
(Winkler, Dale A.) 8: 705

paleoclimatology—Paleocene
Montana: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090

paleoclimatology—Pleistocene
Pacific Ocean: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119

paleoclimatology—Quaternary
California: Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California
(Dorn, Ronald I., *et al.*) 2: 108

— Isotopic evidence for climatic influence on alluvial-fan development in Death Valley, California; discussion and reply
(Wells, S. G., *et al.*) 12: 1178
Western U.S.: Late Quaternary alluvial history of the American West; toward a process paradigm
(Karlstrom, Eric. T., *et al.*) 1: 88

paleoecology—brachiopods
Devonian: Frasnian/Famennian mass extinction and cold-water oceans; discussion and reply
(Raymond, Anne, *et al.*) 8: 777

paleoecology—corals
Devonian: Effect of the Frasnian-Famennian extinction event on the stromatoporoids
(Stearn, Colin W.) 7: 677
Ordovician: Encrusting corals on a latest Ordovician to earliest Silurian rocky shore, Southwest Hudson Bay, Manitoba, Canada
(Johnson, Markes E., *et al.*) 1: 15

paleoecology—Cretaceous
global: Global trace-element biogeochemistry at the K/T boundary; oceanic and biotic response to a hypothetical meteorite impact
(Erickson, David J., III, *et al.*) 11: 1014
Montana: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090

paleoecology—Devonian
Alberta: Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393

paleoecology—foraminifers
Miocene: Equatorial Pacific deep-sea benthic foraminifera; faunal changes before the middle Miocene polar cooling; with Suppl. Data 87-34
(Thomas, E., *et al.*) 11: 1035
Paleocene: Danian faunal succession; planktonic foraminiferal response to a changing marine environment
(Gerstel, Jennifer, *et al.*) 7: 665
Tertiary: New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171

paleoecology—mollusks
Pleistocene: Stable isotope compositions of fossil mollusks from Southern California; evidence for a cool last interglacial ocean
(Muhs, Daniel R., *et al.*) 2: 119

paleoecology—ostracods
Pliocene: Use of ostracodes to recognize downslope contamination in paleobathymetry and a preliminary reappraisal of the paleodepth of the Prasas Marls (Pliocene), Crete, Greece; discussion and reply
(Kontrovitz, Mervin, *et al.*) 4: 377

paleoecology—Paleocene
Montana: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090

paleoecology—Tertiary
global: Global trace-element biogeochemistry at the K/T boundary; oceanic and biotic response to a hypothetical meteorite impact
(Erickson, David J., III, *et al.*) 11: 1014

paleoecology—Triassic
global: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

Paleogene *see also under* geochronology *under* India; *see also under* stratigraphy *under* Atlantic Coastal Plain; Florida; Georgia; South Carolina; Southeastern U.S.

Paleogene—stratigraphy
unconformities: Global distribution of late Paleogene hiatuses; with Suppl. Data 87-12
(Keller, G., *et al.*) 3: 199

paleogeography—Cambrian
Atlantic region: Definition of the Iapetus rift-drift transition in western Newfoundland
(Williams, Harold, *et al.*) 11: 1044
North America: Geological implications of Late Cambrian trilobites from the Collier Shale, Jessieville area, Arkansas
(Hart, William D., *et al.*) 5: 447

paleogeography—Carboniferous
Morocco: Early Carboniferous basins of the Atlas-Meseta domain (Morocco); sedimentary model and geodynamic evolution
(Beauchamp, Jacques, *et al.*) 9: 797

paleogeography—Holocene
Virginia: Role of tree dams in the construction of pseudo-terraces and variable geomorphic response to floods in Little River valley, Virginia
(Kochel, R. Craig, *et al.*) 8: 718

paleogeography—interpretation
slopes: Pipe vesicles in Hawaiian basaltic lavas; their origin and potential as paleoslope indicators
(Walker, George P.) 1: 84

paleogeography—Mesozoic
Mexico: U-Pb ages of granitoid clasts in upper Mesozoic arc-derived strata of the Vizcaino Peninsula, Baja California, Mexico
(Kimbrough, David L., *et al.*) 1: 26

paleogeography—Miocene
Nevada: Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553

paleogeography—Ordovician
Atlantic region: $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages
(Dallmeyer, R. D.) 11: 998

paleogeography—Paleogene
Southeastern U.S.: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327

paleogeography—Paleozoic
Appalachians: Vertical movements of the crust; case histories from the northern Appalachian Basin
(Friedman, Gerald M.) 12: 1130
North America: Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

paleogeography—Permian
California: Paleogeographic implications of Permian Tethyan corals from the Klamath Mountains, California
(Miller, M. Meghan, *et al.*) 3: 266

paleogeography—Tertiary
California: New estimates of displacement along the San Andreas Fault in Central California based on paleobathymetry and paleogeography
(Stanley, Richard G.) 2: 171

paleogeography—Triassic
Arizona: Dissected paleotopography and base-level changes in a Triassic fluvial sequence
(Kraus, Mary J., *et al.*) 1: 18
Colorado Plateau: Late Triassic paleogeography of the southern Cordillera; the problem of a source for voluminous volcanic detritus in the Chinle Formation of the Colorado Plateau region; discussion and reply
(Wyman, Richard V., *et al.*) 6: 578
Oregon: Biogeographic complexity in Triassic bivalves of the Wallowa Terrane, northwestern United States; oceanic islands, not continents, provide the best analogues
(Newton, Cathryn R.) 12: 1126

paleomagnetism *see under* geochronology

paleomagnetism—Cretaceous
Alabama: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311

Bolivia: Tectonic rotations on the leading edge of South America; the Bolivian orocline revisited
(Beck, Myrl E., Jr.) 9: 806
California: Cretaceous age of the upper part of the McCoy Mountains Formation, southeastern California and southwestern Arizona, and its tectonic significance; reconciliation of paleobotanical and paleomagnetic evidence
(Stone, Paul, *et al.*) 6: 561

paleomagnetism—interpretation
magnetic anomalies: Magnetic felsic intrusions associated with Canadian Archean gold deposits
(Hattori, Keiko) 12: 1107
magnetic minerals: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7
sea-floor spreading: Kinematic model for the opening of the Sea of Japan and the bending of the Japanese islands; discussion and reply
(Courtillot, Vincent, *et al.*) 9: 879

paleomagnetism—Miocene
California: Temporally constrained tectonic rotations derived from magnetostratigraphic data; implications for the initiation of the Garlock Fault, California
(Burbank, Douglas W., *et al.*) 12: 1172

paleomagnetism—Paleozoic
Florida: Florida as an exotic terrane; paleomagnetic and geochronologic investigation of lower Paleozoic rocks from the subsurface of Florida
(Opdyke, Neil D., *et al.*) 10: 900

paleomagnetism—remanent magnetization
dikes: Spreading structure of the Troodos ophiolite, Cyprus; some paleomagnetic constraints
(Allerton, Simon, *et al.*) 7: 593

paleomagnetism—reversals
periodicity: Limitations to the statistical analysis of episodic and periodic models of geologic time series
(Lutz, Timothy M.) 12: 1115

paleomagnetism—Tertiary
Alabama: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
Nevada: Paleomagnetic and structural evidence for middle Tertiary counterclockwise block rotation in the Dixie Valley region, west-central Nevada
(Hudson, Mark R., *et al.*) 7: 638

paleontology—biologic evolution
concepts: Darwin's three mistakes; discussions and replies
(Schoch, Robert M., *et al.*) 2: 175
— Darwin's three mistakes; discussion and reply
(Kellogg, Davida E., *et al.*) 4: 375
mass extinctions: Limitations to the statistical analysis of episodic and periodic models of geologic time series
(Lutz, Timothy M.) 12: 1115

paleontology—fossilization
experimental studies: Transport-induced abrasion of fossil reptilian teeth; implications for the existence of Tertiary dinosaurs in the Hell Creek Formation, Montana
(Argast, Scott, *et al.*) 10: 927

Paleosols *see under* environmental analysis *under* sedimentary rocks; *see under* lithostratigraphy *under* metamorphic rocks

paleotemperature *see* geologic thermometry *under* fluid inclusions

Paleozoic *see also* Cambrian; Devonian; *see also under* stratigraphy *under* Alps; Austria; Florida; New York; Venezuela

paleozoogeography *see* biogeography

palladium ores—mineral exploration
greenstone belts: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

palynomorphs—miospores
Cretaceous: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896

Pennsylvania—geomorphology
glacial geology: Pleistocene pingo scars in Pennsylvania
(Marsh, Ben) 10: 945

Pennsylvania—petrology
metamorphism: Mineralogic domains in very low grade pelitic rocks
(Juster, Thomas C.) 11: 1010

Pennsylvania—structural geology
structural analysis: Diverse melanges of an ancient subduction complex
(Lash, Gary G.) 7: 652

Pennsylvanian *see also under* stratigraphy *under* North America

periglacial features *see under* glacial geology

Permian *see also under* stratigraphy *under* California

petroleum—exploration
indicators: Occurrence of secondary magnetite within biodegraded oil
(McCabe, Chad, *et al.*) 1: 7

petrology—classification
metamorphic rocks: Blueschists and eclogites; discussion and reply
(Brothers, R. N., *et al.*) 8: 773

petrology—data processing
pyroclastics: Discrimination of grain-size subpopulations in pyroclastic deposits
(Sheridan, Michael F., *et al.*) 4: 367

petrology—methods
sampling: Orientation of specimens; essential data for all fields of geology
(Prior, D. J., *et al.*) 9: 829

Phanerozoic *see also* Cambrian; Cretaceous; Devonian; Eocene; Oligocene; Paleocene; Paleogene; Quaternary; Tertiary; Triassic

Phanerozoic—paleontology
biologic evolution: Phanerozoic trends in background extinction; consequence of an aging fauna; discussion and reply
(Van Valen, Leigh M., *et al.*) 9: 875

Phanerozoic—stratigraphy
paleoecology: Effect of the advent and diversification of vascular land plants on mineral weathering through geologic time
(Knoll, Martin A., *et al.*) 12: 1099

phase equilibria—carbonates
experimental studies: Kinetics of dolomitization
(Sibley, Duncan F., *et al.*) 12: 1112
interpretation: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

phase equilibria—granites
P-T conditions: Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709

phase equilibria—magmas
interpretation: Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota
(Chalokwu, Christopher I., *et al.*) 1: 71
— Reequilibration of olivine with trapped liquid in the Duluth Complex, Minnesota; discussion and reply
(Green, John C., *et al.*) 11: 1079

phase equilibria—metasedimentary rocks
P-T conditions: Mineralogic domains in very low grade pelitic rocks
(Juster, Thomas C.) 11: 1010

phase equilibria—volcanic rocks
interpretation: Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496

Philippine Islands—geochemistry
isotopes: Sr-isotopic composition of marbles from the Puerto Galera area (Mindoro, Philippines); additional evidence for a Paleozoic age of a metamorphic complex in the Philippine island arc
(Knittel, Ulrich, *et al.*) 2: 136

physical geography *see* geomorphology

pingos *see under* periglacial features *under* glacial geology

Plantae *see also* algal flora; angiosperm flora; ichnofossils; palynomorphs

plants—paleoecology
Phanerozoic: Effect of the advent and diversification of vascular land plants on mineral weathering through geologic time
(Knoll, Martin A., *et al.*) 12: 1099

plate tectonics *see also under* tectonophysics *under* Adriatic Sea; Africa; Alaska; Antarctica; Arabian Peninsula; Arctic region; Atlantic region; Australasia; Australia; Burma; California; Canadian Shield; Eurasia; India; Indian Ocean; Italy; Japan; Japan Sea; Mediterranean region; New Brunswick; New Zealand; North America; Pacific Ocean; Pacific region; Red Sea region; South America; Thailand

plate tectonics—concepts
history: Hess, Menard, and Wegener; thoughts on thoughts in the plate tectonics revolution
(Allwardt, Alan) 5: 475
— Historical note on "Evolution ocean basins" preprint by H. H. Hess, 1906-1969
(Bowin, Carl) 5: 475
terranes: Suspect philosophy?
(Hudson, Travis L.) 12: 1177

plate tectonics—effects
fault zones: Thickening of fault zones; a mechanism of melange formation in accreting sediments
(Moore, J. Casey, *et al.*) 11: 1040
metamorphism: Transition from diagenesis to metamorphism in extensional and collision settings
(Robinson, Douglas) 9: 866

plate tectonics—island arcs
mechanism: Why do island arcs form cusps at their junctions?
(Yamaoka, Koshun, *et al.*) 1: 34

plate tectonics—mechanism
orogeny: Orogen-parallel extension and oblique tectonics; the relation between stretching lineations and relative plate motions
(Ellis, Michael, *et al.*) 11: 1022

plate tectonics—movement
kinematics: Cycloid kinematics of relative plate motion
(Cronin, Vincent S.) 11: 1006

plate tectonics—subduction
subduction zones: Thermal effects of metamorphic fluids in subduction zones
(Peacock, Simon M.) 11: 1057
thermal regime: Landward vergence in accretionary prisms; the role of the backstop and thermal history
(Byrne, Tim, *et al.*) 12: 1163

platinum ores—mineral exploration
greenstone belts: Archean cratons, diamond and platinum; evidence for coupled long-lived crust-mantle systems
(Groves, David I., *et al.*) 9: 801

Pleistocene *see also under* geochronology *under* China; Mexico; *see also under* stratigraphy *under* California; Pacific Ocean

Pliocene *see also under* stratigraphy *under* Greece

plutons *see under* intrusions

pollution *see also under* environmental geology *under* California

potassium—geochemistry
leucitite: Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451

Precambrian *see also* Archean; *see also under* stratigraphy *under* Western Australia

Proterozoic *see also under* geochronology *under* Colorado; Florida; Saudi Arabia; *see also under* stratigraphy *under* California; New Brunswick

Pyrenees *see also* Spain

pyroclastics *see under* igneous rocks

quartz *see under* preferred orientation *under* structural analysis

Quaternary *see also under* geochronology *under* Nevada; New Mexico; *see also under* stratigraphy *under* Greece; symposia; Western U.S.

Quaternary—sedimentary petrology
diagenesis: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673

Quaternary—stratigraphy
changes of level: Late Quaternary sea level; the marine and terrestrial record
(Carew, James L., *et al.*) 12: 1176

Queensland—geophysical surveys
seismic surveys: Deep crustal seismic reflection profiling, New England Orogen, eastern Australia; telescoping of the crust and a hidden, deep, layered sedimentary sequence; discussion and reply
(Murray, Cecil G., *et al.*) 12: 1180

Queensland—petrology
metamorphism: Metamorphic plumbing system in Proterozoic calc-silicates, Queensland, Australia
(Oliver, Nick, *et al.*) 9: 793

Queensland—sedimentary petrology
sedimentation: Coal depositional models for deltaic and alluvial plain sequences
(Fielding, Christopher R.) 7: 661

Queensland—structural geology
tectonics: Deep crustal seismic reflection profiling, New England Orogen, eastern Australia; telescoping of the crust and a hidden, deep, layered sedimentary sequence; discussion and reply
(Murray, Cecil G., *et al.*) 12: 1180
— Evidence for early extensional tectonics in the Proterozoic Mount Isa Inlier, Australia; discussion and reply
(Stewart, Alastair, *et al.*) 10: 976

quicksilver *see* mercury

racemization *see under* geochronology

radioactive dating *see* absolute age

radiocarbon dating *see* absolute age

radiolarians—biostratigraphy
Jurassic: Significance of Jurassic radiolarians from the Cache Creek Terrane, British Columbia
(Cordey, Fabrice, *et al.*) 12: 1151

rare earths *see also* neodymium

rare earths—geochemistry
igneous rocks: Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553
trace elements: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
— Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
— Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
— Trace-element zoning in a metamorphic garnet
(Hickmott, D. D., *et al.*) 6: 573

reclamation *see also* conservation

Red Sea region—tectonophysics
plate tectonics: Arabian Shield ophiolites and late Proterozoic microplate accretion; with Suppl. Data 87-15
(Pallister, John S., *et al.*) 4: 320

reefs *see also under* oceanography *under* East Pacific Ocean Islands; Jamaica; *see also under* sedimentary petrology *under* Alberta; Manitoba

reefs—paleoecology
corals: Effect of the Frasnian-Famennian extinction event on the stromatoporoids
(Stearn, Colin W.) 7: 677

regional geology *see* areal geology under the appropriate area term

remote sensing *see also* geophysical methods; *see also under* geophysical surveys *under* Chile; Egypt; North Carolina

reptiles—dinosaurs
Cretaceous: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896
reptiles—fossilization
reworking: Transport-induced abrasion of fossil reptilian teeth; implications for the existence of Tertiary dinosaurs in the Hell Creek Formation, Montana
(Argast, Scott, *et al.*) 10: 927
Reptilia *see also* reptiles
Rhodesia *see* Zimbabwe
rhyolites *see under* igneous rocks
rift zones *see under* systems *under* faults
Rocky Mountains *see also* the individual states and provinces
Sahara *see also* the individual countries
sandstone *see also under* clastic rocks *under* sedimentary rocks
Saudi Arabia—geochronology
Proterozoic: Arabian Shield ophiolites and late Proterozoic microplate accretion; with Suppl. Data 87-15
(Pallister, John S., *et al.*) 4: 320
Scotland—oceanography
continental shelf: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
Scotland—sedimentary petrology
sedimentation: Coal depositional models for deltaic and alluvial plain sequences
(Fielding, Christopher R.) 7: 661
Scotland—structural geology
tectonics: Late Ordovician to Early Silurian amalgamation of the Dalradian and adjacent Ordovician rocks in the British Isles; discussion and reply
(Williams, D. Michael, *et al.*) 8: 775
sea-floor spreading *see also* continental drift; plate tectonics; *see also under* tectonophysics *under* Japan Sea; Pacific Ocean
sea-floor spreading—concepts
history: Hess, Menard, and Wegener; thoughts on thoughts in the plate tectonics revolution
(Allwardt, Alan) 5: 475
— Historical note on "Evolution ocean basins" preprint by H. H. Hess, 1906-1969
(Bowin, Carl) 5: 475
magma chambers: Evidence for variations in magma production along oceanic spreading centers; a critical appraisal
(Karson, J. A., *et al.*) 2: 127
sea-level fluctuations *see* changes of level
Sea of Japan *see* Japan Sea
sea water—experimental studies
precipitation: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111
sea water—geochemistry
corrosion: Continental margin brine seeps; their geological consequences
(Paull, Charles K., *et al.*) 6: 545
sedimentary petrology—techniques
sampling: Orientation of specimens; essential data for all fields of geology
(Prior, D. J., *et al.*) 9: 829
sedimentary rocks *see also* sedimentary structures; sedimentation; sediments
sedimentary rocks—carbonate rocks
limestone: Biopressured carbonate turbidite sediments; a mechanism for submarine slumping
(Nelson, Robert B., *et al.*) 9: 817
— Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92
— Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610
lithofacies: Nearshore carbonate deposits in Lake Tanganyika
(Cohen, Andrew S., *et al.*) 5: 414
sedimentary rocks—clastic rocks
claystone: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896
diamictite: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica
(Barrett, P. J., *et al.*) 7: 634
environmental analysis: Early Carboniferous besins of the Atlas-Meseta domain (Morocco); sedimentary model and geodynamic evolution
(Beauchamp, Jacques, *et al.*) 9: 797
K-bentonite: Alleghanian episode of K-bentonite illitization in the southern Appalachian Basin
(Elliott, W. Crawford, *et al.*) 8: 735
— Chemical correlation of K-bentonite beds in the Middle Ordovician Decorah Subgroup, Upper Mississippi Valley
(Kolata, Dennis R., *et al.*) 3: 208
marl: Use of ostracodes to recognize downslope contamination in paleobathymetry and a preliminary reappraisal of the paleodepth of the Prasas Marls (Pliocene), Crete, Greece; discussion and reply
(Kontrovitz, Mervin, *et al.*) 4: 377
novaculite: Stylolites in the Caballos Novaculite, West Texas
(Cox, Mark A., *et al.*) 5: 439
provenance: "Antler" clastics in the Canadian Cordillera
(Gordey, S. P., *et al.*) 2: 103
sandstone: Mass transport in sandstones around dissolving plagioclase grains
(Stoessell, R. K.) 4: 295
— $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages
(Dallmeyer, R. D.) 11: 998
shale: Organic carbon losses during burial and thermal maturation of normal marine shales
(Raiswell, Robert, *et al.*) 9: 853
volcaniclastics: Late Triassic paleogeography of the southern Cordillera; the problem of a source for voluminous volcanic detritus in the Chinle Formation of the Colorado Plateau region; discussion and reply
(Wyman, Richard V., *et al.*) 6: 578
— U-Pb ages of granitoid clasts in upper Mesozoic arc-derived strata of the Vizcaino Peninsula, Baja California, Mexico
(Kimbrough, David L., *et al.*) 1: 26
sedimentary rocks—environmental analysis
marine environment: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002
Paleosols: Evidence from Paleosols for ecosystem changes across the Cretaceous/Tertiary boundary in eastern Montana
(Retallack, Gregory J., *et al.*) 12: 1090
sedimentary rocks—lithostratigraphy
Cretaceous: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
— Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233
Jurassic: Early to Middle(?) Jurassic extensional tectonism in the western Great Basin; growth faulting and synorogenic deposition of the Dunlap Formation
(Oldow, John S., *et al.*) 8: 740
Paleogene: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327
sedimentary rocks—organic residues
coal: Coal depositional models for deltaic and alluvial plain sequences
(Fielding, Christopher R.) 7: 661
vitrinite: Maturation anomalies in sediments underlying thick volcanic strata, Oregon; evidence for a thermal event
(Summer, Neil S., *et al.*) 1: 30

sedimentary rocks—textures
surface textures: Biogenic grooving on glass shards; discussion and reply
(Glass, B. P., *et al.*) 5: 470
sedimentary structures *see also* sedimentary rocks; sediments
sedimentary structures—biogenic structures
bioherms: Halimeda bioherms of the eastern Java Sea, Indonesia
(Roberts, H. H., *et al.*) 4: 371
sedimentary structures—planar bedding structures
cyclothems: Sea-level curve for Pennsylvanian eustatic marine transgressive-regressive depositional cycles along Midcontinent outcrop belt, North America; discussion and reply
(Busch, Richard M., *et al.*) 3: 276
hummocky cross-stratification: Model for the combined-flow origin of hummocky cross-stratification
(Nottvedt, A., *et al.*) 4: 357
rhythmic bedding: Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233
sand bodies: Dissected paleotopography and base-level changes in a Triassic fluvial sequence
(Kraus, Mary J., *et al.*) 1: 18
sedimentary structures—secondary structures
stylolites: Stylolites in the Caballos Novaculite, West Texas
(Cox, Mark A., *et al.*) 5: 439
sedimentary structures—soft sediment deformation
olistostromes: Neogene tectonics and plate convergence in the eastern Mediterranean; new data from southern Turkey
(Kelling, Gilbert, *et al.*) 5: 425
— Problems of recognition of olistostromes; an example from the lower Pit Formation, eastern Klamath Mountains, California
(Eastoe, Christopher J., *et al.*) 6: 541
slump structures: Biopressured carbonate turbidite sediments; a mechanism for submarine slumping
(Nelson, Robert B., *et al.*) 9: 817
sedimentation—controls
tectonic controls: "Antler" clastics in the Canadian Cordillera
(Gordey, S. P., *et al.*) 2: 103
— Archean synsedimentary tectonic deformation; a comparison with the Quaternary
(Lamb, Simon) 6: 565
— Coal depositional models for deltaic and alluvial plain sequences
(Fielding, Christopher R.) 7: 661
— Distribution of maximum burial temperature across northern Appalachian Basin and implications for Carboniferous sedimentation patterns; discussion and reply
(Karig, D. E., *et al.*) 3: 278
— Early Cambrian age for synrift deposits of the Chilhowee Group of southwestern Virginia
(Simpson, Edward L., *et al.*) 2: 123
— Early Carboniferous basins of the Atlas-Meseta domain (Morocco); sedimentary model and geodynamic evolution
(Beauchamp, Jacques, *et al.*) 9: 797
— Early to Middle(?) Jurassic extensional tectonism in the western Great Basin; growth faulting and synorogenic deposition of the Dunlap Formation
(Oldow, John S., *et al.*) 8: 740
— Fission-track dating of bentonites and bentonitic mudstones from the Morrison Formation in central Utah
(Kowallis, Bart J., *et al.*) 12: 1138
— History and controls of subsidence in the Late Cretaceous-Tertiary Great Valley forearc basin, California
(Moxon, Ian W., *et al.*) 7: 626
— Late Miocene reactivation of ancestral Rocky Mountain structures in the Texas Panhandle; a response to Basin and Range extension
(Budnik, Roy T.) 2: 163
— Late Precambrian tectonism in the Kingston Range, Southern California; discussion and reply
(Troxel, Bennie W., *et al.*) 3: 274
— Origin of cratonic basins
(Klein, George deV., *et al.*) 12: 1094
— Sedimentary response to Mississippian tectonic activity at the east end of the 38th Parallel fracture zone; discussion and reply
(Bjerstedt, Thomas W., *et al.*) 3: 282
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082
— Tectonic and sea-level controls on nontropical Neogene limestones in New Zealand
(Kamp, Peter J. J., *et al.*) 7: 610
— Tectonic denudation of the Shuswap metamorphic terrane of southeastern British Columbia
(Brown, Richard L., *et al.*) 2: 142
— Timing the breakup of a Proterozoic supercontinent; evidence from Australian intracratonic basins
(Lindsay, John F., *et al.*) 11: 1061
sedimentation—cyclic processes
diagenesis: Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 262
marine sedimentation: Cenozoic unconformities and depositional supersequences of North Atlantic continental margins; testing the Vail model
(Poag, C. Wylie, *et al.*) 2: 159
— Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233
transgression: Sea-level curve for Pennsylvanian eustatic marine transgressive-regressive depositional cycles along Midcontinent outcrop belt, North America; discussion and reply
(Busch, Richard M., *et al.*) 3: 276
sedimentation—diagenesis
carbonate platforms: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673
cyclic processes: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92
precipitation: Modern marine dolomite cement in a north Jamaican fringing reef
(Mitchell, J. T., *et al.*) 6: 557
sedimentation—environment
glaciolacustrine environment: Restricted regional extent of the Laurentide ice sheet in the Great Lakes basins during early Wisconsin glaciation
(Eyles, Nicholas, *et al.*) 6: 537
nearshore environment: Nearshore carbonate deposits in Lake Tanganyika
(Cohen, Andrew S., *et al.*) 5: 414
sedimentation—precipitation
carbonates: Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control?
(Burton, Elizabeth A., *et al.*) 2: 111
sedimentation—processes
deep-sea sedimentation: Global distribution of late Paleogene hiatuses; with Suppl. Data 87-12
(Keller, G., *et al.*) 3: 199
fluvial sedimentation: Dissected paleotopography and base-level changes in a Triassic fluvial sequence
(Kraus, Mary J., *et al.*) 1: 18
— Late Quaternary alluvial history of the American West; toward a process paradigm
(Karlstrom, Eric T., *et al.*) 1: 88
— Sediment-yield history of a small basin in southern Utah, 1937-1976; implications for land management and geomorphology
(Hereford, Richard) 10: 954

glaciomarine sedimentation: Mid-Cenozoic record of glaciation and sea-level change on the margin of the Victoria Land basin, Antarctica (Barrett, P. J., *et al.*) 7: 634
marine sedimentation: Gulf Trough; the Atlantic connection (Popenoe, Peter, *et al.*) 4: 327
— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank (Eberli, Gregor P., *et al.*) 1: 75
— Segmentation and coalescence of Cenozoic carbonate platforms, northwestern Great Bahama Bank; discussion and reply (Ball, M. M., *et al.*) 11: 1081

sedimentation—provenance
sandstone: $^{40}Ar/^{39}Ar$ age of detrital muscovite within Lower Ordovician sandstone in the coastal plain basement of Florida; implications for West African terrane linkages (Dallmeyer, R. D.) 11: 998
volcaniclastics: Late Triassic paleogeography of the southern Cordillera; the problem of a source for voluminous volcanic detritus in the Chinle Formation of the Colorado Plateau region; discussion and reply (Wyman, Richard V., *et al.*) 6: 578
— U-Pb ages of granitoid clasts in upper Mesozoic arc-derived strata of the Vizcaino Peninsula, Baja California, Mexico (Kimbrough, David L., *et al.*) 1: 26

sedimentation—sedimentation rates
bioclastic sedimentation: Equatorial Pacific deep-sea benthic foraminifera; faunal changes before the middle Miocene polar cooling; with Suppl. Data 87-34 (Thomas, E., *et al.*) 11: 1035
marine sedimentation: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea (Calvert, S. E., *et al.*) 10: 918

sedimentation—transport
marine transport: Crescentic dunes on the inner continental shelf off Northern California (Cacchione, D. A., *et al.*) 12: 1134
— Model for the combined-flow origin of hummocky cross-stratification (Nottvedt, A., *et al.*) 4: 357
stream transport: Transport-induced abrasion of fossil reptilian teeth; implications for the existence of Tertiary dinosaurs in the Hell Creek Formation, Montana (Argast, Scott, *et al.*) 10: 927
wind transport: Airflow-terrain interactions through a mountain gap, with an example of eolian activity beneath an atmospheric hydraulic jump (Gaylord, David R., *et al.*) 9: 789
— Dispersal of ash in the great Toba eruption, 75 ka (Rose, W. I., *et al.*) 10: 913
— Influences of eolian and pedogenic processes on the origin and evolution of desert pavements (McFadden, Leslie D., *et al.*) 6: 504
— Vertebrate-bearing eolian unit from the Ogallala Group (Miocene) in northwestern Texas (Winkler, Dale A.) 8: 705

sediments *see also* sedimentary rocks; sedimentary structures; sedimentation

sediments—carbonate sediments
diagenesis: Forward modeling of bank-margin carbonate diagenesis (Matthews, R. K., *et al.*) 7: 673

sediments—clastic sediments
alluvium: Sediment-yield history of a small basin in southern Utah, 1937-1976; implications for land management and geomorphology (Hereford, Richard) 10: 954
loess: Thermoluminescence dating of the Malan Loess at Zhaitang, China (Lu Yanchou, *et al.*) 7: 603
textures: Vertebrate-bearing eolian unit from the Ogallala Group (Miocene) in northwestern Texas (Winkler, Dale A.) 8: 705
volcaniclastics: Dispersal of ash in the great Toba eruption, 75 ka (Rose, W. I., *et al.*) 10: 913

sediments—environmental analysis
glaciolacustrine environment: Restricted regional extent of the Laurentide ice sheet in the Great Lakes basins during early Wisconsin glaciation (Eyles, Nicholas, *et al.*) 6: 537

sediments—geochemistry
diagenesis: Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas (Swart, Peter K., *et al.*) 3: 262
trace elements: Natural cause for mercury pollution at Clear Lake, California, and paleotectonic inferences (Varekamp, Johan C., *et al.*) 11: 1018

sediments—marine sediments
geochemistry: Carbon accumulation rates and the origin of the Holocene sapropel in the Black Sea (Calvert, S. E., *et al.*) 10: 918
— Relative precipitation rates of aragonite and Mg calcite from seawater; temperature or carbonate ion control? (Burton, Elizabeth A., *et al.*) 2: 111
mechanical properties: Inferences on sediment strength and fault friction from structures at the Aleutian Trench (Davis, Dan M., *et al.*) 6: 517

seismic methods *see under* geophysical methods

seismic surveys *see under* geophysical surveys *under* Arctic Ocean; Arizona; Atlantic Ocean; California; data processing; Georgia; North Sea; Pacific Ocean; Queensland; South Carolina

seismology *see also* earthquakes

seismology—earthquakes
deep-focus earthquakes: Subcrustal earthquakes in the central South Island, New Zealand, and the root of the Southern Alps (Reyners, Martin) 12: 1168
swarms: Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987 (Grapes, R. H., *et al.*) 12: 1123

seismology—seismicity
boundary conditions: Crustal subdivisions of the eastern and central United States and a seismic boundary hypothesis for eastern seismicity (Hatcher, Robert D., Jr., *et al.*) 6: 528
causes: Hydroseismicity; a hypothesis for the role of water in the generation of intraplate seismicity (Costain, J. K., *et al.*) 7: 618
seismotectonics: Is the Adriatic an African promontory? (Anderson, Helen) 3: 212
— Migration of the seismic-aseismic transition during uniform and nonuniform extension of the continental lithosphere (England, Philip, *et al.*) 4: 291

shale *see under* clastic rocks *under* sedimentary rocks

shear zones *see under* effects *under* faults

shore features *see under* geomorphology

Silurian *see also under* geochronology *under* California

slope stability *see also* geomorphology; *see also under* engineering geology *under* New Zealand

soils—analysis
sample preparation: SEM analysis of weathered grains; pretreatment effects (Cremeens, D. L., *et al.*) 5: 401

soils—surveys
California: Influences of eolian and pedogenic processes on the origin and evolution of desert pavements (McFadden, Leslie D., *et al.*) 6: 504

solubility *see under* properties *under* geochemistry

South Africa—economic geology
gold ores: Problems with the placer model for Witwatersrand gold (Phillips, G. Neil, *et al.*) 11: 1027

South Africa—petrology
metamorphism: Early Archean silicate spherules of probable impact origin, South Africa and Western Australia; discussions and replies (French, Bevan M., *et al.*) 2: 178

South Africa—stratigraphy
Archean: Archean synsedimentary tectonic deformation; a comparison with the Quaternary
(Lamb, Simon) 6: 565

South Africa—structural geology
tectonics: Archean synsedimentary tectonic deformation; a comparison with the Quaternary
(Lamb, Simon) 6: 565

South America *see also* Andes; Argentina; Bolivia; Chile; Venezuela

South America—tectonophysics
plate tectonics: Tectonic rotations on the leading edge of South America; the Bolivian orocline revisited
(Beck, Myrl E., Jr.) 9: 806

South Carolina—geophysical surveys
seismic surveys: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327

South Carolina—stratigraphy
Paleogene: Gulf Trough: the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327

Southeastern U.S.—oceanography
continental margin: Continental margin brine seeps; their geological consequences
(Paull, Charles K., *et al.*) 6: 545

Southeastern U.S.—stratigraphy
Paleogene: Gulf Trough; the Atlantic connection
(Popenoe, Peter, *et al.*) 4: 327

Southern Hemisphere *see also* Africa; Antarctica; Atlantic Ocean; Indian Ocean; Pacific Ocean; South America

Southern U.S. *see also* Alabama; Arkansas; Mississippi

Southwestern U.S. *see also* Arizona; New Mexico; Texas

Spain—structural geology
neotectonics: Response of Quaternary fluvial systems to differential epeirogenic uplift; Aguas and Feos river systems, Southeast Spain
(Harvey, A. M., *et al.*) 8: 689

spectroscopy *see also* electron microscopy

Spitsbergen—oceanography
continental margin: Continent-ocean transition at the western Barents Sea/Svalbard continental margin
(Eldholm, Olav, *et al.*) 12: 1118

Spitsbergen—sedimentary petrology
sedimentary structures: Model for the combined-flow origin of hummocky cross-stratification
(Nottvedt, A., *et al.*) 4: 357

springs *see also* ground water

stratigraphy—data processing
lithofacies: Forward modeling of bank-margin carbonate diagenesis
(Matthews, R. K., *et al.*) 7: 673

strontium—isotopes
Sr-87/Sr-86: Biotic, geochemical, and paleomagnetic changes across the Cretaceous/Tertiary boundary at Braggs, Alabama
(Jones, Douglas S., *et al.*) 4: 311
— Crust-magma interactions and the evolution of arc magmas; the San Pedro-Pellado volcanic complex, southern Chilean Andes
(Davidson, Jon P., *et al.*) 5: 443
— Isotopic heterogeneity in a tilted plutonic system, Klamath Mountains, California
(Barnes, Calvin G., *et al.*) 6: 523
— Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99
— Regional middle Proterozoic enrichment of the subcontinental mantle source of igneous rocks from central Montana
(Dudas, Francis O., *et al.*) 1: 22
— Role of tectonism and fractional crystallization in the origin of lower Paleozoic epidote-bearing granitoids, northwestern Argentina
(Saavedra, Julio, *et al.*) 8: 709
— Sediment subduction and the source of potassium in orogenic leucitites
(Rogers, N. W., *et al.*) 5: 451
— Sr-isotopic composition of marbles from the Puerto Galera area (Mindoro, Philippines); additional evidence for a Paleozoic age of a metamorphic complex in the Philippine island arc
(Knittel, Ulrich, *et al.*) 2: 136
— Strontium isotopic relations of bimodal volcanic rocks at Kikai Volcano in the Ryukyu Arc, Japan
(Notsu, Kenji, *et al.*) 4: 345
— Use of strontium isotopes to constrain the timing and mode of dolomitization of upper Cenozoic sediments in a core from San Salvador, Bahamas
(Swart, Peter K., *et al.*) 3: 262

structural analysis *see also* folds; lineation; tectonics

structural analysis—faults
shear zones: Post-Nevadan deformation along the Bear Mountains fault zone; implications for the Foothills terrane, central Sierra Nevada, California
(Paterson, Scott R., *et al.*) 6: 513

structural analysis—folds
fold axes: Constraints on timing of deformation in the Benton Range, southeastern California, and implications to Nevadan orogenesis
(Renne, Paul R., *et al.*) 11: 1031
kink folds: Kink folding in an extended terrane; Tortilla Mountains, southeastern Arizona; discussions and replies
(Verbeek, Earl R., *et al.*) 9: 870

structural analysis—interpretation
melange: Diverse melanges of an ancient subduction complex
(Lash, Gary G.) 7: 652
— Tectonically driven fluid flow in the Kodiak accretionary complex, Alaska
(Vrolijk, Peter) 5: 466
outcrops: Taconic deformation and metasomatism in Proterozoic rocks of the easternmost Adirondacks
(Whitney, P. R., *et al.*) 6: 500
petrofabrics: Late Cretaceous to early Tertiary ductile deformation; Catalina-Rincon metamorphic core complex, southeastern Arizona
(Bykerk-Kauffman, Ann, *et al.*) 5: 462
polyphase processes: Ellesmerian(?) and Brookian deformation in the Franklin Mountains, northeastern Brooks Range, Alaska, and its bearing on the origin of the Canada Basin
(Oldow, J. S., *et al.*) 1: 37
— Proterozoic cuspate basement-cover structure, Needle Mountains, Colorado
(Harris, C. W., *et al.*) 10: 950
terranes: Influence of deformation on pressure-temperature paths of metamorphism
(Chamberlain, C. Page, *et al.*) 1: 42

structural analysis—preferred orientation
quartz: Brevard fault zone, Southern Appalachians; a medium-angle, dextral, Alleghanian shear zone
(Vauchez, Alain) 7: 669

structural geology—classification
dip-slip faults: Stratigraphic and structural consequences of fault reversal; an example from the Franklinian Basin, Ellesmere Island
(De Paor, Declan G., *et al.*) 10: 948

structural geology—methods
sampling: Orientation of specimens; essential data for all fields of geology
(Prior, D. J., *et al.*) 9: 829

structural geology—theoretical studies
tectonics: Geomorphic and tectonic process rates; effects of measured time interval
(Gardner, Thomas W., *et al.*) 3: 259

structural petrology *see* structural analysis

stylolites *see under* secondary structures *under* sedimentary structures

sulfur—geochemistry
shale: Organic carbon losses during burial and thermal maturation of normal marine shales
(Raiswell, Robert, *et al.*) 9: 853

sulfur—isotopes
S-34/S-32: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002
— Sulfur-isotope anomaly associated with the Frasnian-Famennian extinction, Medicine Lake, Alberta, Canada
(Geldsetzer, Helmut H. J., *et al.*) 5: 393

sulphur *see* sulfur

symposia—areal geology
Caribbean region: Caribbean geological conference, Barbados
(MacDonald, William D.) 1: 89

symposia—stratigraphy
archaeology: Archaeological geology; environmental siting and material usage
(Vitaliano, Charles J., *et al.*) 6: 577
changes of level: Late Quaternary sea level; the marine and terrestrial record
(Carew, James L., *et al.*) 12: 1176
Quaternary: Late Quaternary alluvial history of the American West; toward a process paradigm
(Karlstrom, Eric T., *et al.*) 1: 88

Tanzania—geochemistry
isotopes: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99

Tanzania—sedimentary petrology
sedimentary rocks: Nearshore carbonate deposits in Lake Tanganyika
(Cohen, Andrew S., *et al.*) 5: 414

Tanzania—volcanology
Oldoinyo Lengai: Altered former alkalic carbonatite lava from Oldoinyo Lengai, Tanzania; inferences for calcite carbonatite lavas
(Dawson, J. B., *et al.*) 8: 765

techniques *see under* practice *under* geology; *see under* electron microscopy; sedimentary petrology

tectonics *see also* epeirogeny; faults; folds; orogeny; plate tectonics; structural analysis; *see also under* structural geology *under* Alaska; Alberta; Andes; Apennines; Appalachians; Arizona; Atlantic Ocean; Australia; Basin and Range Province; Bolivia; British Columbia; California; Cambrian; Canada; Canadian Shield; Himalayas; Idaho; India; Ireland; Mexico; Montana; Morocco; Nevada; New South Wales; New York; New Zealand; North America; Northwest Territories; Queensland; Scotland; South Africa; Texas; Venezuela; Victoria; Western Australia; Western Interior; Yukon Territory

tectonics—concepts
metamorphism: Transition from diagenesis to metamorphism in extensional and collision settings
(Robinson, Douglas) 9: 866
rates: Geomorphic and tectonic process rates; effects of measured time interval
(Gardner, Thomas W., *et al.*) 3: 259
terranes: Suspect philosophy?
(Hudson, Travis L.) 12: 1177

tectonics—evolution
basin range structure: Migration of the seismic-aseismic transition during uniform and nonuniform extension of the continental lithosphere
(England, Philip, *et al.*) 4: 291
basins: Origin of cratonic basins
(Klein, George deV., *et al.*) 12: 1094
lineaments: Orogen-parallel extension and oblique tectonics; the relation between stretching lineations and relative plate motions
(Ellis, Michael, *et al.*) 11: 1022
orogenic belts: Two-dimensional modeling of the P-T-t paths of regional metamorphism in simple overthrust terrains
(Shi, Yaolin, *et al.*) 11: 1048

tectonophysics—concepts
history: Hess, Menard, and Wegener; thoughts on thoughts in the plate tectonics revolution
(Allwardt, Alan) 5: 475
— Historical note on "Evolution ocean basins" preprint by H. H. Hess, 1906-1969
(Bowin, Carl) 5: 475

tectonophysics—practice
programs: Continental scientific drilling, the ADCOH Project, and large programs in the earth sciences
(Hatcher, Robert D., Jr.) 5: 473

tektites—properties
surface textures: Biogenic grooving on glass shards; discussion and reply
(Glass, B. P., *et al.*) 5: 470

temperature *see under* burial metamorphism *under* metamorphism

tephrochronology *see under* geochronology

terrestrial crust *see* crust

terrestrial mantle *see* mantle

Tertiary *see also* Eocene; Oligocene; Paleocene; Paleogene; *see also under* geochronology *under* New Zealand; *see also under* stratigraphy *under* Alabama; Antarctica; California; Montana; Nevada; Wyoming

Tert[i]ary—stratigraphy
boundary: Dynamic deformation of volcanic ejecta from the Toba Caldera; possible relevance to Cretaceous/Tertiary boundary phenomena; discussion and reply
(Izett, Glen A., *et al.*) 1: 90
paleoecology: Global trace-element biogeochemistry at the K/T boundary; oceanic and biotic response to a hypothetical meteorite impact
(Erickson, David J., III, *et al.*) 11: 1014

Texas—sedimentary petrology
sedimentary structures: Stylolites in the Caballos Novaculite, West Texas
(Cox, Mark A., *et al.*) 5: 439

Texas—stratigraphy
Miocene: Vertebrate-bearing eolian unit from the Ogallala Group (Miocene) in northwestern Texas
(Winkler, Dale A.) 8: 705

Texas—structural geology
neotectonics: Late Miocene reactivation of ancestral Rocky Mountain structures in the Texas Panhandle; a response to Basin and Range extension
(Budnik, Roy T.) 2: 163
tectonics: Tectonic interpretation of the westernmost part of the Ouachita-Marathon (Hercynian) orogenic belt, West Texas-Mexico
(Shurbet, D. H., *et al.*) 5: 458

Thailand—tectonophysics
plate tectonics: Nan River suture zone, northern Thailand; with Suppl. Data 87-32
(Barr, Sandra M., *et al.*) 10: 907

theoretical studies *see under* clay mineralogy; crust; deformation; heat flow; structural geology

thermal analysis *see also* electron microscopy

thermal waters *see also under* hydrogeology *under* California

thermoluminescence *see under* geochronology

thrust faults *see under* displacements *under* faults

trace elements *see under* geochemical cycle *under* geochemistry; *see under* geochemistry *under* igneous rocks; iridium; lava; Mississippi Valley; rare earths; sediments

tracks and trails *see* ichnofossils

Triassic *see also under* stratigraphy *under* Arizona; Colorado Plateau; Oregon

Triassic—stratigraphy
paleo-oceanography: Control of Triassic seawater chemistry and temperature on the evolution of post-Paleozoic aragonite-secreting faunas
(Railsback, L. Bruce, *et al.*) 11: 1002

trilobites—biostratigraphy
Cambrian: Geological implications of Late Cambrian trilobites from the Collier Shale, Jessieville area, Arkansas
(Hart, William D., *et al.*) 5: 447

tritium *see also* deuterium; hydrogen

Turkey—structural geology
neotectonics: Neogene tectonics and plate convergence in the eastern Mediterranean; new data from southern Turkey
(Kelling, Gilbert, *et al.*) 5: 425

Uganda—geochemistry
isotopes: Nd and Sr isotopic compositions of East African carbonatites; implications for mantle heterogeneity
(Bell, Keith, *et al.*) 2: 99

unconformities *see under* stratigraphy *under* Eocene; Oligocene; Paleogene

underground water *see* ground water

United Kingdom *see also* England; Great Britain; Scotland; Wales

United States *see also* Alabama; Alaska; Arizona; Arkansas; California; Colorado; Eastern U.S.; Florida; Georgia; Hawaii; Idaho; Illinois; Maine; Midwest; Minnesota; Mississippi; Montana; Nevada; New Jersey; New Mexico; New York; North Carolina; Oregon; Pacific Coast; Pennsylvania; South Carolina; Texas; Utah; Virginia; Washington; West Virginia; Western U.S.; Wyoming

United States—tectonophysics
crust: Crustal subdivisions of the eastern and central United States and a seismic boundary hypothesis for eastern seismicity
(Hatcher, Robert D., Jr., *et al.*) 6: 528

Utah—environmental geology
land use: Sediment-yield history of a small basin in southern Utah, 1937-1976; implications for land management and geomorphology
(Hereford, Richard) 10: 954

Utah—geochronology
Jurassic: Fission-track dating of bentonites and bentonitic mudstones from the Morrison Formation in central Utah
(Kowallis, Bart J., *et al.*) 12: 1138

Utah—structural geology
neotectonics: Fluid inclusion evidence for minimum 11 km vertical offset on the Wasatch Fault, Utah
(Parry, W. T., *et al.*) 1: 67

Venezuela—stratigraphy
Cretaceous: (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications
(Benjamini, C., *et al.*) 10: 922
Paleozoic: (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications
(Benjamini, C., *et al.*) 10: 922

Venezuela—structural geology
tectonics: (Late?) Paleozoic age for the "Cretaceous" Tucutunemo Formation, northern Venezuela; stratigraphic and tectonic implications
(Benjamini, C., *et al.*) 10: 922

Vertebrata *see also* ichnofossils

Vertebrata—occurrence
Miocene: Vertebrate-bearing eolian unit from the Ogallala Group (Miocene) in northwestern Texas
(Winkler, Dale A.) 8: 705

vertebrates *see also* reptiles

Victoria—structural geology
tectonics: Thin-skinned tectonics in part of the Lachlan fold belt near Delegate, southeastern Australia
(Glen, R. A., *et al.*) 11: 1070

Virginia—geomorphology
fluvial features: Role of tree dams in the construction of pseudo-terraces and variable geomorphic response to floods in Little River valley, Virginia
(Kochel, R. Craig, *et al.*) 8: 718

Virginia—stratigraphy
Cambrian: Early Cambrian age for synrift deposits of the Chilhowee Group of southwestern Virginia
(Simpson, Edward L., *et al.*) 2: 123

volcanic features *see under* geomorphology

volcanic rocks *see under* igneous rocks

volcanism *see under* volcanology

volcanoes *see under* volcanology

volcanology—data processing
pyroclastic flows: Discrimination of grain-size subpopulations in pyroclastic deposits
(Sheridan, Michael F., *et al.*) 4: 367

volcanology—volcanism
absolute age: Critical evaluation of the age of the Deccan Traps, India; implications for flood-basalt volcanism and faunal extinctions
(Baksi, Ajoy K.) 2: 147
calderas: Compositional layers in the zoned magma chamber of the Grizzly Peak Tuff
(Fridrich, Christopher J., *et al.*) 4: 299
— Dynamic deformation of volcanic ejecta from the Toba Caldera; possible relevance to Cretaceous/Tertiary boundary phenomena; discussion and reply
(Izett, Glen A., *et al.*) 1: 90
eruptions: Possible effect of aspect ratios of magma chambers on eruption frequency; discussion and reply
(Pollard, D. D., *et al.*) 9: 877
island arcs: Depths and water content of magma chambers in the Aleutian and Mariana island arcs
(Baker, Don R.) 6: 496
— Isotopic age constraints on middle Paleozoic deformation in the northern Sierra Nevada, California
(Saleeby, Jason B., *et al.*) 8: 757
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades
(Smith, Gary A., *et al.*) 5: 389
— Stratigraphic, sedimentologic, and petrologic record of late Miocene subsidence of the central Oregon High Cascades; discussion and reply
(VanLandingham, S. L., *et al.*) 11: 1082
magma chambers: Constraints on magma ascent, emplacement, and eruption; geochemical and mineralogical data from drill-core samples at Obsidian Dome, Inyo Chain, California
(Vogel, Thomas A., *et al.*) 5: 405
stratovolcanoes: Structural and geochemical constraints on the reassembly of disrupted mid-Miocene volcanoes in the Lake Mead-Eldorado Valley area of southern Nevada
(Weber, Michael E., *et al.*) 6: 553
submarine environment: Characteristics of some igneous extrusive and hypabyssal features in seismic data
(Jenyon, Malcolm K.) 3: 237
tectonic controls: Off-axis volcanism in the Gregory Rift, East Africa; implications for models of continental rifting
(Bosworth, William) 5: 397

volcanology—volcanoes
Alaska: Late Quaternary caldera-forming eruptions in the eastern Aleutian Arc, Alaska
(Miller, Thomas P., *et al.*) 5: 434
Kikai: Strontium isotopic relations of bimodal volcanic rocks at Kikai Volcano in the Ryukyu Arc, Japan
(Notsu, Kenji, *et al.*) 4: 345
Lascar: Using the Landsat thematic mapper to detect and monitor active volcanoes; an example from Lascar Volcano, northern Chile
(Francis, P. W., *et al.*) 7: 614
Mount Saint Helens: Changing concepts of geologic structure and the problem of siting nuclear reactors; examples from Washington State; discussion
(Chadwick, Bill) 4: 375
Oldoinyo Lengai: Altered former alkalic carbonatite lava from Oldoinyo Lengai, Tanzania; inferences for calcite carbonatite lavas
(Dawson, J. B., *et al.*) 8: 765
Tarawera volcanic complex: Widening of the Taupo volcanic zone, New Zealand, and the Edgecumbe earthquake of March 1987
(Grapes, R. H., *et al.*) 12: 1123
Toba Lake: Dispersal of ash in the great Toba eruption, 75 ka
(Rose, W. I., *et al.*) 10: 913

Wales—sedimentary petrology
diagenesis: Origin of minor limestone-shale cycles; climatically induced or diagenetic?; discussion and reply
(Weedon, G. P., *et al.*) 1: 92

Wales—structural geology
faults: Menai Strait fault system; an early Caledonian terrane boundary in North Wales
(Gibbons, Wes) 8: 744

Washington—engineering geology
geologic hazards: Changing concepts of geologic structure and the problem of siting nuclear reactors; examples from Washington State; discussion
(Chadwick, Bill) 4: 375
nuclear facilities: Changing concepts of geologic structure and the problem of siting nuclear reactors; examples from Washington State; discussion
(Chadwick, Bill) 4: 375
waste disposal: Two-stage vesiculation in the Cohassett Flow of the Grande Ronde Basalt, south-central Washington
(McMillan, Kent, *et al.*) 9: 809

Washington—structural geology
orogeny: "Antler" allochthon in the Kootenay Arc?
(Gehrels, George E., *et al.*) 8: 769

waste disposal *see also under* engineering geology *under* Washington

water *see also* ground water; hydrology

weathering *see also under* geochemistry *under* organic materials; *see also under* geomorphology *under* Antarctica; data processing; New South Wales; Western Australia

weathering—analysis
electron microscopy: SEM analysis of weathered grains; pretreatment effects
(Cremeens, D. L., *et al.*) 5: 401

weathering—chemical weathering
solution: Salt as an agent in the development of cavernous weathering
(Young, Ann R. M.) 10: 962

weathering—igneous rocks
diabase: Capillary moisture flow and the origin of cavernous weathering in dolerites of Bull Pass, Antarctica; discussion
(Winkler, Erhard M.) 10: 975

weathering—interpretation
biogenic effects: Effect of the advent and diversification of vascular land plants on mineral weathering through geologic time
(Knoll, Martin A., *et al.*) 12: 1099

West Indies *see also* Bahamas; Jamaica

West Virginia—stratigraphy
Mississippian: Sedimentary response to Mississippian tectonic activity at the east end of the 38th Parallel fracture zone; discussion and reply
(Bjerstedt, Thomas W., *et al.*) 3: 282

Western Australia—geomorphology
weathering: Salt as an agent in the development of cavernous weathering
(Young, Ann R. M.) 10: 962

Western Australia—petrology
metamorphism: Early Archean silicate spherules of probable impact origin, South Africa and Western Australia; discussions and replies
(French, Bevan M., *et al.*) 2: 178

Western Australia—stratigraphy
Precambrian: Continental rifting and the Archean-Proterozoic transition
(Blake, Tim S., *et al.*) 3: 229

Western Australia—structural geology
tectonics: Continental rifting and the Archean-Proterozoic transition
(Blake, Tim S., *et al.*) 3: 229

Western Australia—tectonophysics
crust: Continental rifting and the Archean-Proterozoic transition
(Blake, Tim S., *et al.*) 3: 229

Western Hemisphere *see also* Atlantic Ocean; North America; Pacific Ocean; South America

Western Interior—stratigraphy
Cretaceous: Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233

Western Interior—structural geology
tectonics: Effects of climate, tectonics, and sea-level changes on rhythmic bedding patterns in the Niobrara Formation (Upper Cretaceous), U.S. Western Interior
(Laferriere, Alan P., *et al.*) 3: 233

Western U.S. *see also* Alaska; California; Colorado; Hawaii; Idaho; Montana; Nevada; Oregon; Pacific Coast; Utah; Washington; Wyoming

Western U.S.—economic geology
metal ores: Lithophile-element mineralization associated with Late Cretaceous two-mica granites in the Great Basin; with Suppl. Data 87-16
(Barton, Mark D.) 4: 337

Western U.S.—stratigraphy
Quaternary: Late Quaternary alluvial history of the American West; toward a process paradigm
(Karlstrom, Eric T., *et al.*) 1: 88

Western U.S.—structural geology
neotectonics: Late Miocene reactivation of ancestral Rocky Mountain structures in the Texas Panhandle; a response to Basin and Range extension
(Budnik, Roy T.) 2: 163

Wyoming—geomorphology
eolian features: Airflow-terrain interactions through a mountain gap, with an example of eolian activity beneath an atmospheric hydraulic jump
(Gaylord, David R., *et al.*) 9: 789

Wyoming—stratigraphy
Cretaceous: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896
Tertiary: Dinosaurs, spherules, and the "magic" layer; a new K-T boundary clay site in Wyoming
(Bohor, Bruce F., *et al.*) 10: 896

Wyoming—tectonophysics
crust: Gravity patterns and Precambrian structure in the North American central plains
(Thomas, M. D., *et al.*) 6: 489

xenoliths *see under* inclusions

Yukon Territory—economic geology
gold ores: Dual origins of lode gold deposits in the Canadian Cordillera; discussion and reply
(Pickthorn, W. J., *et al.*) 5: 471

Yukon Territory—structural geology
tectonics: "Antler" clastics in the Canadian Cordillera
(Gordey, S. P., *et al.*) 2: 103

Zimbabwe—geochemistry
mantle: Uniquely fresh 2.7 Ga komatiites from the Belingwe greenstone belt, Zimbabwe
(Nisbet, E. G., *et al.*) 12: 1147

Zimbabwe—stratigraphy
Archean: Uniquely fresh 2.7 Ga komatiites from the Belingwe greenstone belt, Zimbabwe
(Nisbet, E. G., *et al.*) 12: 1147

zoogeography *see* biogeography

Geology Author Index
Volume 15

Abbott, J. G. 2: 103
Agar, S. M. 4: 353
Agar, S. M. 9: 829
Ague, Jay J. 1: 63
Aiken, Carlos L. V. 10: 978
Ajie, H. O. 2: 108
Ajie, H. O. 12: 1178
Aleinikoff, John N. 9: 861
Allen, Charlotte M. 6: 523
Allerton, Simon 7: 593
Allmendinger, Richard W. 4: 304
Allwardt, Alan 5: 475
Anderson, Helen 3: 212
Anderson, Thomas F. 11: 1002
Anderson, Thomas H. 6: 578
Archer, Allen W. 3: 233
Argast, Scott 10: 927
Arndt, N. T. 12: 1147
Arndt, Nicholas T. 10: 893
Arnow, J. A. 9: 832
Aronson, James L. 5: 430
Aronson, James L. 8: 735
Arthur, Michael A. 4: 311
Arvidson, Raymond E. 9: 873
Ashby, James R. 2: 139
Astor, Andrew M. 2: 151
Ave Lallemant, H. G. 1: 37
Avedik, Felix 9: 857
Aydin, Atilla 6: 579
Baarli, B. Gudveig 1: 15
Baer, Gidon 6: 569
Baker, Don R. 6: 496
Baksi, Ajoy K. 2: 147
Ball, M. M. 11: 1081
Barazangi, M. 4: 304
Barg, E. 1: 45
Barley, Mark E. 9: 801
Barnes, Calvin G. 6: 523
Barr, Sandra M. 10: 907
Barreiro, B. A. 10: 941
Barrett, P. J. 7: 634
Barrientos, Ximena 9: 841
Bartel, Richard L. 8: 740
Bartlett, Timothy R. 12: 1112
Barton, J. M., Jr. 1: 11
Barton, Mark D. 2: 115
Barton, Mark D. 4: 337
Bates, M. P. 9: 829
Beauchamp, Jacques 9: 797
Beck, Myrl E., Jr. 9: 806
Bell, Keith 2: 99
Bell, T. H. 9: 829
Benjamin, Michael T. 7: 680
Benjamini, C. 10: 922
Benn, K. 9: 821
Berner, Robert A. 9: 853
Besse, Jean 9: 879
Beukens, R. P. 9: 837
Bhattacharyya, Tapas 2: 132
Bickford, M. E. 9: 861
Bickle, M. J. 12: 1147
Bjerstedt, Thomas W. 3: 282
Blake, M. C., Jr. 8: 773
Blake, Tim S. 3: 229
Blenkinsop, John 2: 99
Bluck, B. J. 8: 775
Boardman, Mark R. 12: 1176
Bohor, B. F. 1: 90
Bohor, Bruce F. 10: 896
Boillot, Gilbert 7: 622
Bollinger, G. A. 7: 618
Bosworth, William 5: 397
Bowin, Carl 5: 475
Boyajian, George E. 9: 875
Bradbury, J. Platt 11: 1082
Brigham, Robert H. 6: 523
Brimhall, George H. 1: 63
Brinkman, Daniel L. 10: 927
Brocher, Thomas M. 12: 1159
Brodie, K. H. 9: 829
Brophy, John A. 3: 280
Brothers, R. N. 8: 773
Brown, E. H. 8: 773
Brown, L. 12: 1103
Brown, L. D. 4: 304
Brown, Richard L. 2: 142
Bruhn, R. L. 1: 67
Bryan, Jonathan R. 4: 311
Budnik, Roy T. 2: 163
Buick, Roger 2: 178
Burbank, Douglas W. 12: 1172
Burchfiel, B. Clark 3: 249
Burchfiel, B. Clark 3: 274
Burton, Elizabeth A. 2: 111
Busch, Richard M. 3: 276
Byerly, Gary R. 2: 178
Bykerk-Kauffman, Ann 5: 462
Bykerk-Kauffman, Ann 9: 870
Byrne, Tim 11: 1040
Byrne, Tim 12: 1163
Cacchione, D. A. 12: 1134
Calvert, S. E. 10: 918
Calzia, J. P. 3: 274
Cameron, W. E. 12: 1147
Camp, J. E. 9: 849
Carew, James L. 12: 1176
Carlson, Richard W. 1: 22
Carmichael, D. M. 2: 185
Carter, N. L. 1: 90
Cebull, S. E. 5: 458
Celaya, M. 9: 879
Celaya, Michael 1: 53
Celaya, Michael 10: 981
Chadwick, Bill 4: 375
Chalokwu, Christopher I. 1: 71
Chalokwu, Christopher I. 11: 1079
Chamberlain, C. Page 1: 42
Chamberlain, V. E. 2: 185
Channell, James E. T. 4: 311
Charles, Robert W. 8: 748
Chase, Clem C. 10: 978
Chauvel, C. 12: 1147
Cheadle, M. 12: 1147
Chesner, C. A. 10: 913
Chi, W. R. 3: 199
Choi, D. R. 10: 981
Chough, S. K. 1: 45
Church, W. R. 2: 182
Coflin, Kevin C. 10: 931
Cohen, Andrew S. 5: 414
Colman-Sadd, S. P. 2: 182
Colucci, Michael T. 5: 443
Conca, James L. 2: 151
Cook, Frederick A. 10: 931
Cooper, A. F. 10: 941
Copper, Paul 8: 777
Cordey, Fabrice 12: 1151
Costain, J. K. 7: 618
Courtillot, Vincent 9: 879
Cox, Mark A. 5: 439
Crawford, Maria Luisa 8: 771
Cremeens, D. L. 5: 401
Cronin, Vincent S. 11: 1006
Cross, Randal W. 9: 809
Currier-Lewis, Debra 9: 870
Dallmeyer, R. D. 11: 998
Daniels, Ulrich 2: 136
Darmody, R. G. 5: 401
Davidson, Jon P. 5: 443
Davin, M. T. 6: 500
Davis, Dan M. 6: 517
Davis, George H. 9: 870
Dawson, J. B. 8: 765
Dawson, Paul J. 9: 789
De Paor, Declan G. 7: 630
De Paor, Declan G. 10: 948
Dedoes, Robert E. 12: 1112
Dehn, J. 4: 367
DeNiro, M. J. 2: 108
DeNiro, M. J. 12: 1178
Dennison, John M. 3: 282
DeWever, Patrick 12: 1151
D'Hondt, S. 3: 199
Dickinson, William R. 8: 727
Dickson, Stephen M. 11: 1014
Dietrich, James R. 10: 931
Dillon, W. P. 11: 1081
Dixon, James 10: 931
Dobson, Jon P. 4: 311
Dorn, R. I. 12: 1178
Dorn, Ronald I. 2: 108
Dorr, John A., Jr. 3: 204
Dorsey, R. 3: 199
Drake, D. E. 12: 1134
Dudas, Francis O. 1: 22
Dungan, Michael A. 5: 443
Eastoe, Christopher J. 6: 541
Eberli, Gregor P. 11: 1081
Eberli, Gregor P. 1: 75
Effendi, L. 4: 371
Eggler, David H. 1: 22
Ehrlich, Robert 7: 665
Eisenstadt, Gloria 7: 630
Eisenstadt, Gloria 10: 948
El Ramly, Mahmoud F. 9: 873
Eldar, Iris 1: 3
Eldholm, Olav 12: 1118
Elliott, W. Crawford 8: 735
Ellis, D. J. 2: 167
Ellis, Michael 11: 1022
Ellis, P. G. 4: 341
Elston, Donald P. 7: 634
Elthon, D. 2: 127
England, John 5: 419
England, Philip 4: 291
Erickson, David J., III 11: 1014
Eriksson, K. A. 10: 950
Ethington, Raymond L. 5: 447
Evans, B. W. 8: 773
Eyles, Nicholas 6: 537
Faleide, Jan Inge 12: 1118
Farlow, James O. 10: 927
Farre, John A. 6: 509
Fates, D. Gilbert 11: 1074
Faulds, James E. 9: 870
Faure, Michel 1: 49
Faure, Michel 10: 981
Ferguson, C. C. 9: 829
Ferguson, Kurt M. 5: 443
Field, M. E. 12: 1134
Fielding, Christopher R. 7: 661
Fink, Jonathan H. 6: 549
Fischer, Lynn B. 4: 320
Fisher, Richard V. 5: 470
Fisher, Robert L. 6: 583
Fitzgerald, Paul G. 8: 694
Floyd, Peter A. 5: 425
Fox, P. J. 11: 993
Francis, P. W. 7: 614
French, Bevan M. 2: 178
Fridrich, Christopher J. 4: 299
Friedman, Gerald M. 12: 1130

Frohlich, Cliff 7: 673
Frost, Joyce K. 3: 208
Fukao, Yoshio 1: 34
Gabet, Rose M. 10: 927
Gabrielse, H. 2: 103
Garcia, Michael O. 10: 904
Gardner, Jamie N. 8: 748
Gardner, Thomas W. 3: 259
Garson, M. S. 8: 765
Gaylord, David R. 9: 789
Gehrels, George E. 8: 769
Geissman, John W. 7: 638
Geist, Eric L. 12: 1159
Geldsetzer, Helmut H. J. 5: 393
Geli, Louis 9: 857
Gephart, J. 12: 1103
Gerstel, Jennifer 7: 665
Gibbons, Wes 8: 744
Gibson, R. G. 10: 950
Giguere, M. 9: 832
Ginsburg, Robert N. 1: 75
Ginsburg, Robert N. 11: 1081
Glass, B. P. 5: 470
Glazner, Allen F. 4: 375
Glen, R. A. 11: 1070
Goff, Fraser 8: 748
Gokcen, Nuran 5: 425
Gokcen, Sungu L. 5: 425
Goldfarb, Richard J. 5: 471
Goldstein, Steven L. 10: 893
Goodfellow, Wayne D. 5: 393
Goodfriend, Glenn A. 8: 698
Goodlin, Thomas C. 8: 727
Gordey, S. P. 2: 103
Graham, Stephan A. 7: 626
Grant, A. C. 9: 845
Grant, N. T. 9: 829
Grant, Norman K. 1: 71
Grant, Norman K. 11: 1079
Grapes, R. H. 12: 1123
Green, Harry W., II 4: 324
Green, John C. 11: 1079
Greiling, Reinhard O. 9: 873
Grieve, R. A. F. 6: 489
Griffin, William L. 3: 241
Griffiths, George A. 7: 643
Grover, Jeffrey A. 8: 727
Groves, David I. 3: 229
Groves, David I. 9: 801
Gudmundsson, Agust 9: 877
Gustin, Michael M. 6: 541
Guth, Peter L. 6: 579
Hallam, A. 1: 92
Hamilton, Warren 6: 561
Hannah, Judith L. 8: 757
Hanson, R. Brooks 11: 1074
Harmon, R. S. 5: 451
Harrington, Charles D. 10: 967
Harris, C. W. 10: 950
Hart, William D. 5: 447
Harvey, A. M. 8: 689
Harwood, D. M. 7: 634
Hatcher, Robert D., Jr. 5: 473
Hatcher, Robert D., Jr. 6: 528
Hattin, Donald E. 3: 233
Hattori, Keiko 12: 1107
Hauser, E. C. 12: 1103
Hawkesworth, Christopher J. 5: 451
Haxel, Gordon B. 6: 578
Haydon, Robert C. 7: 598
Heaton, Julia S. 12: 1138
Heckel, Philip H. 3: 276
Hegner, E. 12: 1147
Hein, James R. 8: 722
Helmstaedt, Herwart 3: 280
Henry, Vernon J. 4: 327
Herbert, T. 3: 199
Hereford, Richard 10: 954
Herren, Eveline 5: 409
Herz, Norman 6: 577
Hibbard, Jim 12: 1163
Hickey, James J. 1: 26
Hickmott, D. D. 6: 573
Hilde, Thomas 10: 981
Hiscott, Richard N. 11: 1044
Hla Maung 10: 911
Ho, Susan E. 9: 801
Hoffman, Paul F. 9: 785
Hohensee, Steven R. 5: 447
Holmes, Charles W. 3: 262
Holt, William E. 10: 978
Howard, Keith A. 4: 375
Howard, Keith A. 6: 561
Howell, David G. 3: 216
Hsu, Kenneth J. 2: 175
Hsu, Kenneth J. 4: 375
Hsui, Albert T. 12: 1094
Hubacher, F. A. 1: 80
Hudson, Mark R. 7: 638
Hudson, Travis L. 12: 1177
Huff, Warren D. 3: 208
Hulen, Jeffrey B. 8: 748
Hutton, J. T. 7: 603
Idris, Faisal M. 4: 327
Izart, Alain 9: 797
Izett, Glen A. 1: 90
Jackson, James 4: 291
James, W. Calvin 12: 1099
Janecke, Susanne U. 5: 462
Jansen, I. J. 5: 401
Jansen, J. H. F. 3: 245
Jenyon, Malcolm K. 3: 237
Jercinovich, Michael J. 6: 504
Johnson, Markes E. 1: 15
Johnson, Noye M. 7: 680
Johnsson, M. 3: 199
Johnsson, Mark J. 2: 183
Johnsson, Mark J. 3: 278
Jones, Douglas S. 4: 311
Jones, Douglas S. 10: 900
Jones, E. J. W. 6: 533
Jorgensen, David W. 3: 259
Journeay, J. Murray 2: 142
Julian, F. E. 1: 37
Juster, Thomas C. 11: 1010
Kammer, Thomas W. 3: 282
Kamp, Peter J. J. 7: 610
Kamp, Peter J. J. 8: 694
Karabinos, Paul 1: 42
Karig, D. E. 3: 278
Karlstrom, Eric T. 1: 88
Karlstrom, Thor N. V. 1: 88
Karson, J. A. 2: 127
Kaufman, S. 12: 1103
Keen, C. E. 2: 182
Keen, M. J. 2: 182
Keller, G. 3: 199
Kelley, Patricia H. 8: 777
Kelling, Gilbert 5: 425
Kellogg, Davida E. 4: 375
Kennan, P. S. 12: 1155
Kerrich, R. 1: 58
Kieser, W. E. 9: 837
Kimbrough, D. L. 10: 941
Kimbrough, David L. 1: 26
King, J. E. 2: 155
Klein, George deV. 12: 1094
Klemperer, Simon L. 3: 195
Klepacki, David W. 3: 274
Knipe, R. J. 9: 829
Knittel, Ulrich 2: 136
Knoll, Martin A. 12: 1099
Kochel, R. Craig 8: 718
Kolata, Dennis R. 3: 208
Kontrovitz, Mervin 4: 377
Kooistra, M. J. 3: 245
Korsch, R. J. 11: 1061
Korsch, R. J. 12: 1180
Koski, Randolph A. 8: 722
Kowallis, Bart J. 12: 1138
Koyi, Hemin 11: 1052
Kraus, Mary J. 1: 18
Kreisa, R. D. 4: 357
Ku, T. L. 2: 139
Kusky, Timothy M. 3: 280
Kyser, T. K. 12: 1147
Kyser, T. Kurtis 2: 119
Laferriere, Alan P. 3: 233
Lahren, Mary M. 3: 270
Lalevee, Frederic 1: 49
Lalevee, Frederic 10: 981
Lallemand, Serge 11: 1065
Lamb, Simon 6: 565
Lambert, R. St. J. 2: 185
Land, Lynton S. 6: 557
Lane, Larry S. 10: 931
Larese, Richard E. 4: 333
Lash, Gary G. 7: 652
Latham, T. 12: 1103
Laurent, R. 9: 821
Law, R. D. 9: 829
Le Pichon, Xavier 11: 1065
Leach, D. L. 5: 471
Leahy, Guy D. 12: 1090
Leake, B. E. 8: 775
Lemieux, Corinne R. 3: 259
Lemoine, Marcel 7: 622
Lent, Robert M. 8: 731
Lewis, Catherine L. 10: 971
Lewis, Scott W. 9: 870
Liang K'uangyi 3: 249
Lincoln, J. M. 5: 454
Lindsay, J. F. 12: 1180
Lindsay, John F. 11: 1061
Lindsley-Griffin, Nancy 9: 817
Lister, Gordon S. 4: 362
Litchiser, Joe J. 6: 528
Lloyd, G. E. 9: 829
Lohe, Eric M. 12: 1180
Long, Philip E. 9: 809
Longiaru, Samuel 2: 132
Lovelock, J. E. 10: 983
Lowe, Donald R. 2: 178
Lu Yanchou 7: 603
Lucchitta, Ivo 12: 1103
Ludden, John N. 9: 825
Lutken, Carol Blanton 8: 777
Lutz, Timothy M. 12: 1115
Lux, D. R. 1: 80
Lyons, Paul C. 2: 183
Macdonald, Alan S. 10: 907
MacDonald, G. M. 9: 837
Macdonald, K. C. 11: 993
MacDonald, William D. 1: 89
MacFadden, Bruce J. 10: 900
Machel, Hans G. 10: 936
Mackenzie, J. S. 4: 353
Maddock, R. H. 9: 829
Mahood, Gail A. 4: 299
Manley, Curtis R. 6: 549
Maples, Christopher G. 7: 647
Margolis, Stanley V. 8: 731
Mariolakos, I. 3: 225
Mark, Roger A. 8: 727
Marsh, Ben 10: 945
Martin, A. 12: 1147
Mattey, D. P. 5: 451
Matthews, Drummond H. 3: 195
Matthews, R. K. 7: 673
Mattinson, James M. 10: 941
McCabe, Chad 1: 7
McCabe, Robert 1: 53
McCabe, Robert 9: 879
McCabe, Robert 10: 981
McClay, K. R. 4: 341
McConachy, Geoff W. 7: 598
McFadden, L. D. 12: 1178

McFadden, Leslie D. 6: 504
McKelvey, B. C. 7: 634
McLaren, Digby J. 5: 393
McMackin, Matthews A. 3: 274
McMillan, Kent 9: 809
McSaveney, M. J. 7: 643
Melillo, Allan J. 6: 509
Menendez V., A. 10: 922
Middleton, Larry T. 1: 18
Millard, Hugh T., Jr. 10: 896
Miller, David M. 4: 375
Miller, H. 2: 182
Miller, Jerry 8: 718
Miller, Kenneth G. 6: 509
Miller, M. Meghan 3: 266
Miller, Thomas P. 5: 434
Minch, John A. 2: 139
Miser, Donald E. 6: 557
Mitchell, J. T. 6: 557
Mittwede, Steven K. 4: 375
Molnar, Peter 3: 249
Monger, J. W. H. 12: 1151
Moody, Judith B. 8: 771
Moore, J. Casey 11: 1040
Moreau, Marie-Gabrielle 9: 879
Morley, C. K. 8: 761
Mortimer, N. 12: 1151
Morton, Penelope 11: 1079
Mount, Van S. 12: 1143
Mountain, Gregory S. 6: 509
Moxon, Ian W. 7: 626
Muehlenbachs, Karlis 5: 471
Mueller, Paul A. 4: 311
Mueller, Paul A. 10: 900
Muggeridge, Maureen T. 9: 801
Muhs, Daniel R. 2: 119
Mukasa, Samuel B. 9: 825
Mulugeta, Genene 11: 1052
Murowchick, J. B. 5: 471
Murphy, F. C. 12: 1155
Murray, Cecil G. 12: 1180
Myers, Russell E. 11: 1027
Myhre, Annik M. 12: 1118
Mylroie, John E. 12: 1176
Naeser, Charles W. 7: 680
Nance, R. Damian 8: 753
Naruk, Stephen J. 7: 656
Naruk, Stephen J. 9: 870
Needham, D. T. 4: 353
Nelson, Campbell S. 7: 610
Nelson, K. D. 4: 304
Nelson, K. D. 9: 832
Nelson, Robert B. 9: 817
Nelson, Stephen E. 6: 541
Nesbitt, Bruce E. 5: 471
Neumann, A. Conrad 6: 545
Newton, Cathryn R. 12: 1126
Nichols, B. 2: 182
Nichols, Douglas J. 10: 896
Nielson, Dennis L. 8: 748
Nielson, Jane E. 4: 375
Nir, Yaacov 1: 3
Nisbet, E. G. 10: 983
Nisbet, E. G. 12: 1147
Notsu, Kenji 4: 345
Nottvedt, A. 4: 357
Nur, Amos 6: 579
O'Brien, P. E. 12: 1180
O'Brien, S. J. 2: 182
Officer, Charles B. 1: 90
Okulitch, Andrew V. 2: 187
Oldow, J. S. 1: 37
Oldow, John S. 8: 740
Oliver, J. 12: 1103
Oliver, Jack E. 4: 304
Oliver, Nick 9: 793
O'Neill, Robert L. 3: 283
Ono, Koji 4: 345
Opdyke, Neil D. 10: 900
Orchard, Mike J. 5: 393
O'Reilly, Suzanne Y. 3: 241
Padgham, W. A. 3: 280
Page, Virginia M. 6: 561
Pallister, John S. 4: 320
Pallister, John S. 9: 861
Palmer, Judy A. 11: 1027
Parkinson, Dave 2: 187
Parry, W. T. 1: 67
Passchier, C. W. 10: 976
Patacca, Etta 8: 714
Paterson, Scott R. 2: 132
Paterson, Scott R. 6: 513
Paull, Charles K. 6: 545
Pavlis, Terry L. 3: 283
Peacock, Simon M. 11: 1057
Phillips, G. Neil 11: 1027
Phillips, Loren F. 9: 813
Philpotts, Anthony R. 10: 971
Phipps, C. V. 4: 371
Pickthorn, W. J. 5: 471
Poag, C. Wylie 2: 159
Poag, C. Wylie 6: 509
Pollard, D. D. 9: 877
Popenoe, Peter 4: 327
Potter, Christopher J. 4: 304
Premo, Wayne R. 4: 320
Premo, Wayne R. 9: 861
Prescott, J. R. 7: 603
Presti, A. A. 10: 904
Prezbindowski, Dennis R. 4: 333
Price, R. A. 2: 185
Prior, D. J. 9: 829
Quinlan, G. 2: 182
Radloff, Judith K. 6: 513
Railsback, L. Bruce 11: 1002
Raiswell, Robert 9: 853
Rapela, Carlos W. 8: 709
Raymond, Anne 8: 777
Reches, Ze'ev 6: 569
Reed, John C., Jr. 9: 861
Rehrig, W. 1: 58
Reid, I. 2: 182
Reilinger, Robert 10: 958
Renne, Paul R. 11: 1031
Renner, R. 12: 1147
Retallack, Gregory J. 12: 1090
Reyners, Martin 12: 1168
Reynolds, Stephen J. 4: 362
Ritter, Dale F. 8: 718
Roberts, B. 8: 765
Roberts, H. H. 4: 371
Robertson, G. B. 7: 603
Robinson, Douglas 9: 866
Rock, M. S. 9: 801
Roedder, E. 12: 1147
Roering, C. 1: 11
Rogers, N. W. 5: 451
Rollins, Harold B. 3: 276
Ron, Hagai 6: 579
Rose, W. I. 10: 913
Ross, Keith 5: 470
Rossi de Toselli, Juana N. 8: 709
Rothery, D. A. 7: 614
Royden, Leigh 8: 714
Ruiz, Joaquin 3: 262
Rutter, E. H. 9: 829
Saavedra, Julio 8: 709
Saffer, Barbara 1: 7
Saleeby, Jason B. 8: 757
Saleeby, Jason B. 11: 1074
Sassen, Roger 1: 7
Scandone, Paolo 8: 714
Schamel, S. 9: 832
Schlanger, Seymour O. 5: 454
Schoch, Robert M. 2: 175
Scholz, Christophter H. 6: 493
Schumm, S. A. 9: 813
Schuraytz, Benjamin C. 5: 405
Schweickert, Richard A. 3: 270
Seidensticker, C. M. 1: 37
Selverstone, J. 6: 573
Selverstone, Jane 9: 841
Sempere, J. C. 11: 993
Sexton, M. J. 12: 1180
Shafiqullah, Muhammad 8: 727
Shagam, R. 10: 922
Sharpton, V. L. 6: 489
Sheridan, Michael F. 4: 367
Shi, Yaolin 11: 1048
Shimizu, N. 6: 573
Showers, William J. 8: 731
Shuman, Christopher 3: 259
Shurbet, D. H. 5: 458
Shuster, Robert D. 10: 900
Sibley, Duncan F. 12: 1112
Sibson, Richard H. 8: 701
Silver, Leon T. 6: 578
Simpson, C. 10: 950
Simpson, Edward L. 2: 123
Sissons, B. A. 12: 1123
Skipp, Betty 3: 220
Smith, C. A. 1: 11
Smith, Douglas L. 10: 900
Smith, Eugene I. 6: 553
Smith, Eugene I. 6: 579
Smith, Gary A. 5: 389
Smith, Gary A. 6: 581
Smith, Gary A. 11: 1082
Smith, Moira T. 8: 769
Smith, Robert L. 5: 434
Snee, Lawrence W. 5: 389
Snee, Lawrence W. 11: 1082
Sorensen, Sorena S. 2: 115
Southon, J. R. 10: 918
Soya, Tatsunori 4: 345
Spear, F. S. 6: 573
Speer, J. A. 7: 618
Spoon, Michael D. 12: 1090
St-Onge, M. R. 2: 155
Stacey, John S. 4: 320
Stanley, Richard G. 2: 171
Stearn, Colin W. 7: 677
Stewart, Alastair 10: 976
Stewart, John H. 6: 578
Stiros, S. C. 3: 225
Stitt, James H. 5: 447
Stockmal, G. S. 2: 182
Stoessell, R. K. 4: 295
Stone, Paul 6: 561
Sturchio, Neil C. 9: 873
Sultan, Mohamed 9: 873
Summer, Neil S. 1: 30
Summer, Neil S. 6: 581
Sundberg, Frederick A. 2: 123
Suppe, John 12: 1143
Swart, Peter K. 3: 262
Tate, G. B. 12: 1134
Taylor, Edward M. 5: 389
Taylor, Edward M. 11: 1082
Tempelman-Kluit, Dirk J. 2: 103
Tempelman-Kluit, Dirk J. 2: 187
Thomas, E. 11: 1035
Thomas, M. D. 6: 489
Thouin, Catherine 5: 414
Thunell, Robert 7: 665
Thy, P. 4: 316
Tingle, Tracy N. 4: 324
Tobisch, Othmar T. 2: 132
Tobisch, Othmar T. 6: 513
Tosdal, Richard M. 1: 26
Toselli, Alejandro Jose 8: 709
Trehu, Anne M. 3: 254
Tricart, Pierre 7: 622
Triplehorn, Don M. 10: 896
Troxel, Bennie W. 3: 274
Tullis, Jan 7: 606
Tullis, Jan 8: 771

Turrin, Brent D. 11: 1031
Tyce, R. 11: 993
Underwood, Michael B. 3: 216
van der Gaast, S. J. 3: 245
van Harten, Dick 4: 377
Van Reenen, D. D. 1: 11
Van Schalkwyk, J. F. 1: 11
Van Valen, Leigh M. 2: 175
Van Valen, Leigh M. 9: 875
VandenBerg, A. H. M. 11: 1070
VanLandingham, S. L. 11: 1082
Varekamp, Johan C. 11: 1018
Varga, Robert J. 8: 757
Vauchez, Alain 7: 669
Verbeek, Earl R. 9: 870
Verosub, Kenneth L. 1: 30
Verosub, Kenneth L. 6: 581
Vincent, E. 11: 1035
Vine, F. J. 7: 593
Vitaliano, Charles J. 6: 577
Vitt, D. H. 9: 837
Vogel, J. S. 10: 918
Vogel, Thomas A. 5: 405
von Huene, Roland 6: 517
Vrolijk, Peter 5: 466
W-Gabriel, Giday 5: 430
Waibel, Albert F. 11: 1018
Wake-Dyster, K. D. 12: 1180
Walker, George P. 1: 84
Walker, J. Douglas 3: 274
Wall, Vic 9: 793
Wallace, Terry C. 10: 978
Wallmann, P. C. 9: 877
Walter, Lynn M. 2: 111
Wang, Chi-Yuen 11: 1048
Ward, Lauck W. 2: 159
Waters, Johnny A. 7: 647
Watkinson, A. J. 11: 1022
Webb, P. N. 7: 634
Weber, Michael E. 6: 553
Weedon, G. P. 1: 92
Wehmiller, John F. 12: 1176
Welbon, A. 9: 829
Wellman, H. W. 12: 1123
Wells, J. T. 9: 849
Wells, Neil A. 3: 204
Wells, S. G. 8: 689
Wells, S. G. 12: 1178
Wells, Stephen G. 6: 504
West, Ronald R. 3: 276
Westgate, John A. 6: 537
Wheeler, J. 9: 829
Wheeler, Walter H., IV 3: 254
Whistler, David P. 12: 1172
White, S. H. 9: 829
Whitford-Stark, J. L. 5: 439
Whitney, John W. 10: 967
Whitney, P. R. 6: 500
Wiebe, R. A. 4: 349
Wilber, R. J. 11: 1081
Wilford, John R. 11: 1061
Williams, D. Michael 8: 775
Williams, H. 2: 182
Williams, Harold 11: 1044
Winkler, Dale A. 8: 705
Winkler, Erhard M. 10: 975
Woensdregt, C. F. 3: 245
Wohletz, K. H. 4: 367
WoldeGabriel, Giday 5: 430
Wright, J. 2: 182
Wright, James E. 3: 266
Wright, James E. 6: 578
Wright, John V. 7: 598
Wust, Stephen L. 3: 283
Wust, Stephen L. 9: 870
Wyman, Richard V. 6: 578
Yamaoka, Koshun 1: 34
Yeilding, Cindy A. 3: 282
Young, Ann R. M. 10: 962
Younker, Leland W. 5: 405
Yund, Richard A. 7: 606
Zachos, James C. 4: 311
Zhao Ziyun 3: 249
Zietz, Isidore 6: 528